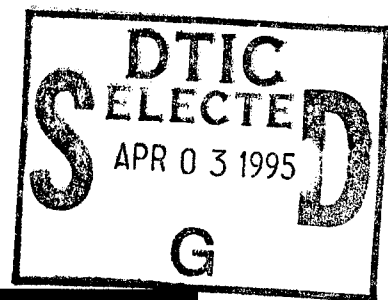


NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



THESIS



RECONCILING ENVIRONMENTAL DEGRADATION AND U.S. NATIONAL SECURITY

by

Scott C. Kraverath

December, 1994

Thesis Advisor: Rodney Kennedy-Minott

Approved for public release; distribution is unlimited.

19950329 048

DTIC QUALITY CONTROL

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE December 1994	3. REPORT TYPE AND DATES COVERED Master's Thesis		
4. TITLE AND SUBTITLE RECONCILING ENVIRONMENTAL DEGRADATION AND U.S. NATIONAL SECURITY		5. FUNDING NUMBERS		
6. AUTHOR(S) Kraverath, Scott C.				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey CA 93943-5000		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) <p>Although environmental concerns are nothing new, it has been only recently that environmental issues have been considered as having national security implications. Along with increased environmental awareness, the end of the cold war has allowed security planners to now include nonmilitary concerns, including the environment, into what has traditionally been a military-oriented policy. Though beginning to take place, this transition or "broadening" of national security policy to include these issues is proving slow and controversial. The nature of environmental issues is such that their inclusion into a national security framework is not an easy one. Because of the current and potential national security threats embodied in environmental degradation, however, a coherent environmental security policy needs to be formulated. Because of the scope, complexity, and unknown nature of environmental issues this has not yet been accomplished. By defining issues, setting criteria and looking at individual cases of environmental degradation in the Western Hemisphere and case studies from Brazil and Mexico, this thesis attempts to reconcile environmental degradation as a US national security issue; to provide greater depth of understanding of environmental security issues and how we may begin solving them.</p>				
14. SUBJECT TERMS National Security, Environmental Security, Environmental Degradation			15. NUMBER OF PAGES 139	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18 298-102

Approved for public release; distribution is unlimited.

RECONCILING ENVIRONMENTAL DEGRADATION

AND
US NATIONAL SECURITY

by

Scott C. Kraverath
Lieutenant, United States Navy
B.A., Miami University, 1989

Submitted in partial fulfillment
of the requirements for the degree of

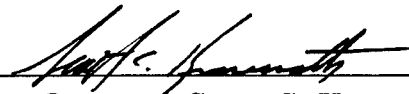
MASTER OF ARTS IN NATIONAL SECURITY AFFAIRS

from the

NAVAL POSTGRADUATE SCHOOL

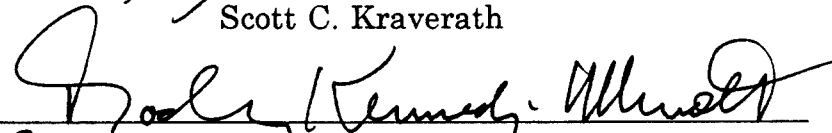
December 1994

Author:

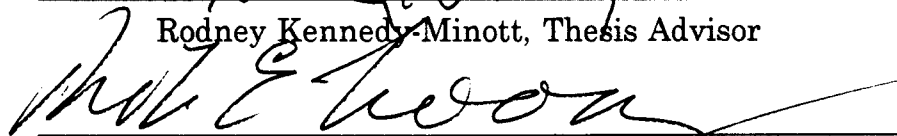


Scott C. Kraverath

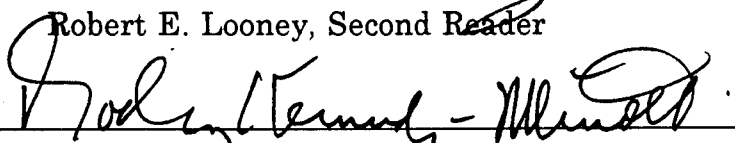
Approved by:



Rodney Kennedy-Minott, Thesis Advisor



Robert E. Looney, Second Reader



Thomas C. Bruneau, Chairman
Department of National Security Affairs

Accession For	
NTIS	CRA&I <input checked="" type="checkbox"/>
DTIC	TAB <input type="checkbox"/>
Unannounced <input type="checkbox"/>	
Justification _____	
By _____	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

ABSTRACT

Although environmental concerns are nothing new, it has been only recently that environmental issues have been considered as having national security implications. Along with increased environmental awareness, the end of the cold war has allowed security planners to now include nonmilitary concerns, including the environment, into what has traditionally been a military-oriented policy. Though beginning to take place, this transition or "broadening" of national security policy to include these issues is proving slow and controversial. The nature of environmental issues is such that their inclusion into a national security framework is not an easy one. Because of the current and potential national security threats embodied in environmental degradation, however, a coherent environmental security policy needs to be formulated. Because of the scope, complexity, and unknown nature of environmental issues this has not yet been accomplished. By defining issues, setting criteria and looking at individual cases of environmental degradation in the Western Hemisphere and case studies from Brazil and Mexico, this thesis attempts to reconcile environmental degradation as a US national security issue; to provide greater depth of understanding of environmental security issues and how we may begin solving them.

TABLE OF CONTENTS

I. INTRODUCTION	1
II. ENVIRONMENTAL DEGRADATION AS A U.S. NATIONAL SECURITY ISSUE	7
A. THE PROBLEMS WITH ENVIRONMENTAL SECURITY	9
B. A DICHOTOMY OF VIEWS	15
1. Consensus	16
2. Controversy	18
C. THE BROADENING OF US NATIONAL SECURITY STRATEGY	24
1. The Security Framework	29
2. Why a National Security Perspective ?	32
3. The Security Criteria	36
4. Issues and Definitions	40
III. ENVIRONMENTAL SECURITY THREATS TO THE UNITED STATES	43
A. TRANSNATIONAL ENVIRONMENTAL OR RESOURCE PROBLEMS THAT THREATEN US SECURITY IN A TRADITIONAL SENSE	45
1. Border Pollution	46
2. Water Quality and Scarcity	49
3. Ocean Degradation	51
B. TRANSNATIONAL ENVIRONMENTAL OR RESOURCE PROBLEMS THAT THREATEN US SECURITY IN A BROAD SENSE	53

1. Global Warming / Atmospheric and Climatic Modifications	53
2. Loss of Genetic Biodiversity	56
3. Deforestation, Soil Erosion and Desertification	58
4. Population Growth	60
C. SOCIAL EFFECTS OF ENVIRONMENTAL DEGRADATION	61
1. Environmental Refugees	62
2. Agricultural and Economic Decline	63
D. ASSESSING ENVIRONMENTAL DEGRADATION AS NATIONAL SECURITY CONCERNS	65
IV. ACHIEVING ENVIRONMENTAL SECURITY	71
A. ENVIRONMENTAL POLITICS	73
1. The Case of Brazil	76
a. <i>The Amazon</i>	79
b. <i>Other Environmental Issues</i>	85
c. <i>The Military Connection</i>	89
d. <i>Lessons From Brazil</i>	91
B. ENVIRONMENTAL ECONOMICS	96
1. Mexico and the North American Free Trade Agreement	97
a. <i>Sovereignty</i>	98
b. <i>Mexico's Environmental Response to NAFTA</i>	102
c. <i>Mexico's Environmental Future</i>	108
V. CONCLUSION	113
SELECTED BIBLIOGRAPHY	119
INITIAL DISTRIBUTION LIST	125

EXECUTIVE SUMMARY

Although environmental concerns are nothing new, the issue of environmental degradation has only recently become recognized as having serious national security implications. In the last twenty years the growth of environmental interest groups, and oil crisis, and a host of environmental disasters have pushed ecological and resource concerns to the front of the American consciousness. It was the end of the cold war, however, which finally provided the opportunity for the re-evaluation of US national security policy to include environmental issues. Indeed, the end of the "threat of communist expansion"—the overriding national security concern of the previous half century—has allowed security planners to now consider many threats, including those from environmental degradation, which had previously been overshadowed by the bipolar struggle. At the same time, however, environmental concern's rapid progression from a sideline domestic issue to a legitimate national security threat has been plagued by incomplete science, speculation, conflicting interests and clashing perspectives. Subsequently, though the general principle of environmental security has become accepted, the specific national security implications of various ecological and resource matters, what they are and how to combat them, remains mostly unknown. It should be noted, however, that the concept of environmental security is still in its earliest stages of development. Though taking discernible form in recent national security and Department of Defense literature, at present it lacks the definition, consistency and sophistication of more mature notions of national security. Together with its highly controversial nature, the fact that not all cases of environmental degradation pose threats to US national security, and no generally accepted criteria for making such a determination currently exists, has meant that resolving which environmental threats constitute legitimate national security threats and prioritizing them is a difficult undertaking. The central objective of this thesis, therefore, centers around easing this problem.

Although environmental security has gained wide currency in recent years, its complicated parameters are only now beginning to emerge. This study attempts to lend organization to this tangled concept by defining issues, establishing security criteria to evaluate environmental issues, and examining which specific cases of environmental degradation in the Western Hemisphere constitute national security threats. How to

resolve these threats is also examined with special significance given to the role played by environmental politics and interstate trade.

Although US national security strategy continues to evolve to embrace a still uncertain post-cold war world, defense strategists remain primarily focused on what can be considered traditional interests and objectives and the strategic concepts for achieving them. Though the mere inclusion of environmental issues in the national security strategy represents a huge advancement in the recognition of environmental security as a legitimate concept, the implications of environmental degradation on national security are still not widely understood. This is apparent in the fact that any detailed discussion on how or where specific environmental issues actually impact US security is rare. Much of the difficulty here stems primarily from two factors: first, there is a lack of specific knowledge about many of the interdependent variables involved in environmental degradation. Our limited ability to draw clear causal ties between sustainable levels of natural resource use, and disastrous overuse, has meant that environmental degradation's implications on the biosphere has not yet been determined in most cases— at least not to the precision required to immediately place them as national security priorities. This fact contributes to a second problem: namely, there is a dire need for an adequate understanding of specifically how environmental degradation actually conditions human behavior. In other words, where environmental stresses provoke regional instability, violence, environmental refugees or other actions which impact US national security. Unlike military threats, environmental threats normally develop gradually over several years. Humans can adapt but sometimes slowly evolving threats do not force us to confront the failure of our current thinking and to reorient ourselves. Because we lack an adequate understanding of the importance of environmental factors to US national security, establishing criteria for assessing the threats in a realistic and politically viable manner has not been accomplished. We accept that threats exist but the nature of environmental security has resisted attempts at implementing clear solutions. What remains particularly difficult is assimilating environmental issues within a national security framework when many of the threats remain nearly impossible to scientifically evaluate with the kind of certainty that fosters immediate action— without a disaster. These factors make environmental degradation one of the most complex and controversial of new national security issues.

Despite a tumultuous time for US foreign policy, current environmental threats that are well known and already echoed in current strategy need to begin to be addressed in more than a merely conceptual manner. This thesis is an effort to assist in establishing this strategy. By looking at some specific cases of environmental degradation this thesis shows how environmental issues can be framed for acceptance as national security concerns. In order to ameliorate these threats, however, requires that an understanding of what constitutes environmental security be followed by what can realistically be done to confront the threats given their unique character. Any basic environmental framework must be flexible enough to allow for a pro-conservation opinion to adopt more realistic and logically scientific points of view while the environmental skeptics are availed of the non-provable, esoteric, interdependent aspects of environmental security. Though controversy will never completely depart these issues, to speed the response to the environmental threats already acquiesced in the current national security strategy and those revealed in this thesis requires that inaction or a lack of planning based purely on an inability to define, prioritize, or frame the threats be overcome.

If they truly ever were, today's national security considerations are neither immaculate nor rigid and dominated by both military as well as nonmilitary threats. Such a watershed was the end of the cold war, however, that little consensus on the overarching nature of a new security strategy currently exists. Lacking these guidelines, if no broadly accepted strategy can be referenced then a long-term perspective will always lose out to short term answers. Since many environmental threats are particularly time-critical, this lack of a coherent security policy including environmental issues is especially risky. Simply, environmental elements of our national security strategy must be established. As well as corresponding to traditional tenets of US security and foreign policy objectives, they must also include new notions of quality of life for which Americans have become accustomed. Through the efforts of correctly framing environmental degradation as national security risks, the combined forces of the military, diplomacy, economic assistance and trade can all work towards achieving environmental security goals.

I. INTRODUCTION

Diplomat and scholar George F. Kennan noted in the Winter 1985-86 issue of *Foreign Affairs* that the "world's environmental as well as its nuclear crises must receive priority if we are to succeed in 'averting these two overriding dangers,' both of which are 'urgent,' 'relatively new,' and for which 'past experience affords little guidance.'"¹ Although we can take comfort in the fact that the threat of global thermonuclear annihilation has diminished with the end of the cold war, what is still troublesome and less clear is to what extent the environmental "crisis" has received the same attention so urged by Kennan.

Environmental concerns are nothing new. As a national security issue, however, environmental degradation has only become recognized as having serious implications within the last twenty years. During that time the growth of environmental interest groups (fueled by an expanded awareness of the transnational reach of environmental degradation), an oil crisis, and a host of environmental disasters have pushed ecological and resource concerns to the front of the American consciousness. It was the end of the cold war, however, which finally provided the opportunity for the re-evaluation of US national security policy to include environmental issues. Indeed, the end of the "threat of communist expansion" — the overriding national security concern of the previous half century— has allowed security planners to now consider many threats which had previously been overshadowed by the bipolar struggle. As Kent Butts of the Army War College points out, "the end of the Cold War brought with it a situation in which regional conflict has been exacerbated and variables that contribute to political instability and regional conflicts are now seen as important issues of foreign policy."² Today, environmental degradation is recognized as among the

¹Andrew Maguire and Janet Welsh Brown, *Bordering on Trouble: Resources & Politics in Latin America* (Bethesda: Adler & Adler, 1986), vii.

²Kent H. Butts, *Environmental Security: DOD Partnership for Peace* (Washington D.C.: U.S. Government Printing Office, 1994), v.

most important of these new variables.³

At the same time, however, environmental concern's rapid progression from a sideline domestic issue to a legitimate national security threat has been plagued by incomplete science, speculation, conflicting interests and clashing perspectives. Subsequently, though the general principle of environmental security has become accepted, the specific national security implications of various ecological and resource matters, what they are and how to combat them, remains mostly unknown. In addition, though the 1994 *National Security Strategy* specifically lists environmental degradation as a national security issue, the idea that environmental concerns should constitute an integral part of US national security policy remains highly controversial. This controversy stems from skepticism about the scientific certainty of many widely-quoted environmental threats, difficulty encountered in framing environmental matters to fit within current notions of national security and, a reluctance to bow to what is sometimes seen as environmental extremism. This controversy is a main reason why there are currently few specific plans regarding how to address even seemingly well understood environmental security threats.

It should be noted that the concept of environmental security is still in its earliest stages of development. Though beginning to take discernible form in recent national security and Department of Defense literature, at present it lacks the definition, consistency and sophistication of more mature notions of national security. Together with its highly controversial nature, the fact that not all cases of environmental degradation pose threats to US national security, and no generally accepted criteria for making such a determination currently exists, has meant that resolving which environmental threats constitute legitimate national

³For a listing of the scholars asserting that large-scale human-induced environmental pressures may seriously affect national and international security see, Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict," *International Security*, Fall 1991, 76.

security threats and prioritizing them is difficult.⁴ The central objective of this thesis, therefore, revolves around easing this problem.

Because of the tremendous scope and complexity involved with these issues, however, I am limiting my discussion to three principle concerns. First, and fundamentally, does environmental degradation pose a US national security risk? Though I have stated that this is a generally accepted notion, the why and how components of this idea have yet to be adequately answered. Lacking this, planning to address the threats is difficult and calls for widespread environmental protection make for a weak argument. Merely accepting that environmental risks exist has not meant that we truly understand the threats or know how to combat them.

Next, is environmental security appropriately dealt with from a US national security perspective? Though it seems obvious that if the first concern is true, and national security risks are apparent from environmental degradation, then their inclusion in US national security planning should be automatic. In reality, however, controversy borne of deficient scientific proof, a lack of a clear understanding of the human dimensions of environmental degradation, and difficulty broadening the parameters of national security have combined to complicate matters and, in many respects, to deny this obvious development.

Finally, the last concern regards the appropriate measures with which to achieve environmental security. Although military capabilities will invariably play a role, it is my assumption that efficient environmental politics as well as economic means (especially trade) are the most appropriate and efficient ways to realize environmental security. There are, however, no panaceas. Achieving environmental security is a long, difficult, and complicated process.

Although environmental security has gained wide currency in recent years, its complicated parameters are only now beginning to emerge. This study will attempt to lend organization to this tangled concept. Structurally, this thesis

⁴Butts, "Environmental Security," 7.

begins with a chapter dedicated to the concept of environmental degradation as a national security issue. Since the principle thrust of this inquiry is aimed at reconciling environmental degradation as a national security issue, what exactly these notions entail needs scrutiny. Also, the broadening of US national security policy required to include environmental issues, and the consensus and controversy surrounding them, are explored to develop the level of understanding necessary to reveal criteria from which to evaluate and prioritize environmental issues. As well as establishing these criteria, reconciling these issues will help foster an appreciation of the pitfalls as well as necessities of pursuing an environmental security strategy.

This is followed by a chapter concerned with broadly identifying specifically which of the many current ecological and resource issues actually fit as US national security concerns based on the definitions and criteria established. Though global in character, the sheer scope and nature of the problem also dictates that analysis focuses on the proximate threats — those mainly incurred from the Western Hemisphere and especially Latin America. Despite this limited scope, lessons learned should be universally applicable.

Although representing a variety of issues as well as foreign policy goals, national security is still often thought of as being limited to a policy to provide defense of the physical territory of a nation and/or to prevent adversaries from using force in preventing the nation's pursuit of its national interests.⁵ Although certainly quite important aspects of national security, the US has been uniquely blessed with secure borders, abundant resources, and has not generally faced resource scarcities or the destabilizing effects of environmental degradation. This has, in most cases, allowed the US to ignore environmental as well as other new nonmilitary threats and retain a dated national security orientation and strategies long beyond their effective or appropriate service. Although contemporary

⁵Sam C. Sarkesian, *U.S. National Security: Policymakers, Processes, and Politics* (Boulder: Lynne Rienner Publishers, 1989), 8.

definitions of national security are slowly broadening to accept new security threats, older notions largely remain and, for the foreseeable future, will persist as the predominant national security orientation. Although this thesis will help provide criteria for determining environmental security risks, in the short term at least it is unlikely that any environmental threats will provoke any use of force against the US prompting an American military retaliation. To many, therefore, basic conceptions of national security are simply not threatened by environmental degradation. Several countries in the Americas, however, are far less lucky than the US in terms of resource availability, dependence upon natural resources, or ability to substitute degraded resources. As well as impacting quality of life for US citizens, environmental degradation and resource limitations in these nations can lead directly to regional instability, violent conflict, ecosystem collapse or other traumas that *are* threatening to US national security. In order to adequately address these threats requires that what constitutes US national security be widened to include the nonmilitary origins of these threats such as those posed by environmental degradation. Part of this broadening dictates that new tactics and methods are also adopted to combat these new risks. Although in some cases military means are adequate to confront some types of environmental degradation, in many situations these tools will be found wholly inappropriate or ineffective. In these cases, environmental politics and the economic power of interstate trade emerge as important implements of US national security.

The final analytical chapter of this thesis builds on the understanding developed in the previous two chapters and explores what is involved in achieving environmental security. Though the usefulness of a military role will be addressed, this thesis will argue that politics and interstate trade represent the two most important factors in mitigating environmental degradation and achieving US environmental security. Not only can trade represent a great cause of environmental degradation itself but, it offers a potent nonmilitary means to check or solve the problems as well. Like the military, trade has offensive and defensive teeth and widespread use of trade or economic embargoes as a tool of US

international interests has already been used for many years. Short of war, trade represents one of the most effective instruments of US foreign policy. Where trade is not as important or beyond US influence, however, the environmental politics involved with such things as development aid, treaties, and international law also become important environmental security tools. Efficient environmental politics, therefore, also needs to be developed. Despite their great potential, however, the use of environmental politics and trade to establish environmental security has many limitations and has thus far met with only limited success. Issues of national pride, sovereignty, cultural and developmental philosophy have sometimes combined to deny environmental efforts. By examining the cases of Brazil and Mexico, some of these failures and limitations of these approaches are shown as well as positive lessons for future efforts.

Environmental degradation, in the words of journalist Robert Kaplan is, "*the* national-security issue of the early 21st century."⁶ Although environmental security may not yet mesh with a clear and unifying grand policy, like containment, its growing recognition as a legitimate threat demands that its national security implications be well understood. As the US continues free trade with Canada and Mexico under The North American Free Trade Agreement, and considers expanding it to the rest of the Western Hemisphere, it is also crucial to be able to assess to what extent these closer political and economic ties can either exacerbate environmental degradation or can be used to stop it— and in the process help or hinder environmental security in the US.

⁶Robert Kaplan, "The Coming Anarchy: A Preview of the Savagery, Tribalism and Warfare that Lie Ahead," *San Francisco Chronicle*, March 13, 1994. (Reprinted from the *Atlantic Monthly*, February 1994, 7.)

II. ENVIRONMENTAL DEGRADATION AS A US NATIONAL SECURITY ISSUE

Although the US National Security Strategy (NSS) continues to evolve to embrace a still uncertain post-cold war world, defense strategists remain primarily focused on what can be considered traditional national interests and objectives and the strategic concepts for achieving them.⁷ For instance, in elaborating "a new national security strategy for [a] new era," the July 1994 NSS lists as its central goals:

- To credibly sustain our security with military forces that are ready to fight
- To bolster America's economic revitalization
- To promote democracy abroad

It should be apparent that these broad goals are all traditional US foreign policy objectives. And, national security recognized in terms of threats arising which demand a military response maintain their position as the initial consideration. This is true despite the end of the cold war and huge cuts in defense spending beginning in the late 1980s. Though transnational environmental issues are subsequently listed in the NSS as factors "increasingly affecting international stability and consequently will present new challenges to US strategy," these threats constitute a peripheral concern.

Although the mere inclusion of environmental issues in the national security strategy represents a huge advancement in the recognition of environmental security as a legitimate concept, the implications of environmental degradation on national security are still not widely understood. This is apparent in the fact that in the NSS any detailed discussion on how or where specific environmental issues actually impact US security is missing. In fact, precisely how current US strategy is directly challenged or what new security strategies are needed to combat the environmental problems is noticeably absent except for the repeated mention of a potential impact on regional stability or "international

⁷Butts "Environmental Security," 2.

frictions". Though the connection is neither always readily apparent nor spelled out, the correlation between environmental issues, regional stability and US national security is treated as an underlying assumption. A serious problem remains that in order for environmental issues to be treated as legitimate national security threats the underlying connections with regional instability, as well as any other security implications surrounding environmental degradation, must be clearly demonstrated. Unless clear causal ties can be established, effective strategies to combat the environmental threats will simply not follow.

Additionally, of the examples cited in the NSS dealing with those environmental threats considered "serious enough to jeopardize international stability," a wide range of diverse issues are listed.⁸ Included are massive population flight from man-made or natural catastrophes, such as Chernobyl or the East African drought, large scale industrial pollution, deforestation, loss of biodiversity, ozone depletion, and global climate change. Though this list embodies many of the widely-quoted environmental security threats, another immediate problem lies in the notion that by grouping these same threats together, some with questionable national security implications, the same uncertain risk level can be mistakenly attributed to all of these disparate issues. Issues like Chernobyl and drought are two wholly different concerns representing vastly different threats and demanding completely different solutions. Grouping them all together as "environmental threats" denies the fact that they speak to different types and levels of risk. Combined with valid questions regarding where and exactly how regional stability is undermined and where the specific causal linkages between the environmental degradation, stability, and US national security lie, any sense of urgency for any particular threat is easily lost amidst the lesser, more controversial, or merely unknown concerns. The lack of definition for the threats, scientific understanding, and criteria for determining which are

⁸The White House, *A National Security Strategy of Engagement and Enlargement* (Washington D.C.: US Government Printing Office, July 1994), 15.

legitimate environmental threats has had the effect of clouding the issue and expanding its scope into an unwieldy size. A consequence of the way environmental degradation has been defined and the threat framed up to now is that the notion that environmental security has not yet coalesced into an easily understandable notion. Hence, validity as a national security concept has been undermined.

Though this is a daunting beginning, one must understand that no formal definition of national security has ever been generally agreed upon. It is a fluid concept with few absolutes and continually subject to change. Since, however, over the past decade environmental issues as contributing factors in regional stability and national "well being" has become accepted, this provides a sound conceptual framework from which to begin addressing some of these issues.⁹ The key remains breaking environmental security out of a ill-defined, poorly understood, though paradoxically widely accepted, level and into the realm of legitimate national security consideration – with its own strategies and goals. In order to accomplish this, exactly which types of environmental issues represent a realistic and defensible threats, why, and how to combat them needs to be clarified. Here lies the truly controversial and confusing aspects of this issue that have combined to slow or prevent acting on the threats.

A. THE PROBLEMS WITH ENVIRONMENTAL SECURITY

Much of the reason for the difficulty fully assimilating environmental issues within US national security stems primarily from two factors. The first revolves around a lack of specific knowledge about many of the interdependent variables

⁹The environment became an element of the NSS and a recognized objective supporting US interests in 1991. This followed UN, AID, and CIA reports and numerous published articles echoing the notion that "ecological stresses constitute real and immanent threats to the future well-being of all people and nations". Joseph J. Romm, *Defining National Security: The Nonmilitary Aspects* (New York: Council on Foreign Relations Press, 1993), 25-27. and Kent Hughes Butts, *Environmental Security*, 7.

involved in environmental degradation. Our limited ability to draw clear causal ties between sustainable levels of natural resource use, disastrous overuse, and its implications on the biosphere (the part of the world where life can exist) have not yet been determined in most cases— at least not to the precision required to immediately place them as national security priorities. This is especially true when it comes to seemingly limitless, globally shared resources such as the atmosphere and the oceans. Although the study of "global change" — including climate change, ozone depletion, resource use and biodiversity— has revolutionized the earth sciences and the combined effort of a loose collaboration on these issues is expected to represent the largest research project in history by the year 2000, today any comprehensive, predictive model of the physical, chemical and biological processes that regulate the earth does not exist.¹⁰ And because of the vast number of interdependent variables involved, there is little reason to be confident that any future predictions will be any more accurate than those currently being employed. This fact contributes to a second problem: namely, there is a dire need for an adequate understanding of specifically how environmental degradation actually conditions human behavior. In other words, where environmental stresses provoke regional instability, violence, environmental refugees or other actions which can impact US national security. Unlike military threats, environmental threats normally develop gradually. Humans can adapt but sometimes, "slow growing threats do not force us to confront the failure of our current thinking and to reorient ourselves. A Pearl Harbor, a *Sputnik*, even an unexpected hole in the ozone layer— those can inspire drastic change. But a slow erosion of our standard of living or a slow increase in our planet's temperature— these bring shrugs and yawns."¹¹ It is this "slow erosion," however, which we are beginning to understand

¹⁰"A Problem as Big as a Planet," *The Economist*, 5 November 1994, 83.

¹¹Joseph J. Romm, *The Once and Future Superpower: How to Restore America's Economic, Energy, and Environmental Security* (New York: William Morrow and Company, 1992), 151.

pose equally grave threats to the nation.

Because we lack an adequate understanding of the importance of environmental factors to US national security, establishing criteria for assessing the threats in a realistic and politically viable manner has not been accomplished. We accept that threats exist but the nature of environmental security has resisted attempts at implementing clear solutions. We have proposed laws, negotiated treaties and attended many conferences on environmental concerns but, we still lack a comprehensive plan to address the national security threats inherent in environmental degradation. Though the concept of national security itself is a contemptuous term, generally what are its most important elements are not difficult to agree upon. That these elements can be compared to a set of clearly defined environmental issues (even without a complete understanding of the intricacies of environmental systems) to determine roughly where environmental issues constitute national security concerns can be accomplished. It is this process that is absolutely crucial to achieving environmental security. Merely accepting that the environment can pose a threat to the US is not enough. In order to be prepared to counter current environmental security threats, or actively preempt future threats, security planners must be able to demonstrate precisely how environmental degradation threatens the nation and be able to create a logical and realistic plan to stop it. This seems fundamental and simple. However, the lack of scientific certainty, controversy and differing points of view surrounding the effects of environmental degradation make a logical, realistic and simple plan difficult to create.

Creating such an understanding and criteria is, as I have stated previously, not as easy a process as it first may seem. The reasons for this begin with scientific uncertainty but are exacerbated by the notion that our understanding of even seemingly simple environmental issues is often confused. Consider this quote:

So-called nonrenewable resources— such as coal, oil and minerals— are in fact inexhaustible, while so-called renewable resources can be finite. As a

nonrenewable resource becomes scarce and more expensive, demand falls, and substitutes and alternative technologies appear. For that reason we will never pump the last barrel of oil or anything close to it. On the other hand, a fishery fished beyond a certain point will not recover, a species driven to extinction will not reappear, and eroded topsoil cannot be replaced (except over geological time). There are, thus, threshold effects for renewable resources that belie the name given them, with unfortunate consequences for policy.¹²

Though semantically questionable, this is indicative of the confusing way in which environmental issues are often framed. Many natural resources, such as the air and water, seem limitless and throughout our history have been treated as if incorruptible. And with programs like forest replanting and fishery management, national security classification for the environment can seem over-cautious. Often, however, environmental systems can become degraded past their sustainable threshold without immediate repercussions or even our knowledge. The long-term consequences of which we barely understand. We must keep in mind that with respect to military threats to national security we routinely plan for worst case scenarios or contingencies. For instance, military strategies surrounding the cold war always involved worst case planning. The threats embodied in nuclear proliferation also demand that we address the potentiality of a detonation. With scientists predicting that the destruction of the ozone layer may result in the additional skin cancer deaths of 200,000 people in the US alone over the next 50 years, for example, or the threat of massive environmental refugees pouring in from Mexico, the Caribbean and Central and South America, prudence dictates that environmental issues also at least be considered in "worst-case" planning.¹³

What remains particularly difficult, however, is assimilating environmental issues within a national security framework when many of the threats remain nearly impossible to scientifically evaluate with the kind of certainty that fosters

¹²Jessica Tuchman Mathews, "Redefining Security," *Foreign Affairs*, Spring 1989, 164.

¹³Romm, *Defining National Security: The Nonmilitary Aspects*, 19.

immediate action— without a disaster. Additional difficulties lie in how US national security strategy develops and how complicated and time consuming a process it is for it to accept new, and especially nonmilitary, threats. All of these factors make environmental degradation one of the most complex and controversial of new national security issues.

Given the level of acceptance of environmental security threats as embodied in the current national security strategy and other literature, it is time that understanding about how to counter them begins to form. Though still fraught with controversy, environmental issues are clearly moving up on the security agenda and their continued rise is all but assured. Despite a tumultuous time for US foreign policy, current environmental threats that are well known and already echoed in current strategy need to begin to be addressed in more than a merely conceptual manner. A pioneer in environmental security, Thomas F. Homer-Dixon reminds us however that "the environment-security theme encompasses an almost unmanageable array of sub-issues especially if we define 'security' broadly to include human physical, social, and economic well-being."¹⁴ This complexity is indeed disconcerting and is prime contributing factor in why this process has not yet begun. To overcome this, environmental security must be framed in such a way that it gains specific meaning as a distinct area of concentration. Therefore, the scope of this problem needs to be narrowed to a workable and unambiguous level. This requires that any all-inclusive level of analysis be avoided because of the extreme complexity involved. This also requires eliminating the highly controversial, currently unknown environmental issues from the known, defensible threats. Though addressing environmental issues in a piecemeal fashion often fails to address crucial linkages between various issues and is rightly criticized, given the limited resources currently available, the high levels of scientific uncertainty, the current lack of a coherent policy, and the demand to act quickly on several environmental fronts then realistically it is only the presently known

¹⁴Homer-Dixon, "On the Threshold," 76-77.

threats that we can hope to begin to counter. From a US national security perspective, it must be understood that only clearly demonstratable threats will prompt action. This view must coincide with the notion that there will be gaps in protecting the seamless web that is the biosphere which will need to be addressed by other agendas. Agendas which will need to step in to handle environmental issues which do not yet constitute US national security threats. Though holistic environmental answers may eventually exist, the current security framework requires that we begin with a limited scope of individual cases of environmental degradation. If, as it is often quoted, long-lead-time environmental systems are nearing or have reached their thresholds and are approaching collapse, then the lack of an appropriate beginning and basic strategy to commence dealing with environmental threats could have disastrous future repercussions.¹⁵

This thesis is an effort to assist in establishing this strategy. By looking at some specific cases of US environmental security threats in the Americas I hope to show how environmental issues can be framed for acceptance as national security concerns. In order to achieve success, however, requires that an understanding of what constitutes environmental security be followed by what can realistically be done to confront the threats given their unique character. This is attempted in the last chapter of this thesis. Before we can get to that, however, some of the issues surrounding environmental security need to be explored further. In this light, the next sections examine some of the consensus and controversy surrounding environmental issues that contribute to the difficulty encountered framing them as national security priorities. This is followed by an examination of some of the problems found in broadening national security policy to include non-traditional threats. Finally, since criteria for defining environmental security threats are needed, its basic elements are explored.

¹⁵Butts, *Environmental Security*, 6.

B. A DICHOTOMY OF VIEWS

A common mistake for environmental advocates is merely citing the ever growing number of transnational environmental concerns without specifically and logically defining those threats within a larger context. Pundits often call for environmental issues to be included in traditional strategic and economic planning without adequately assessing the new and often emotional aspects of environmental degradation, its sometimes dubious scientific backing, or the overall economic or social cost benefit of reversing the degradation. As stated previously, this is due to the fact that, though broadly perceived as a threat, there is an unfortunate lack of any distinct understanding of how to address certain environmental threats relating to national security; "specifically the links between environmental and resource problems and international behavior."¹⁶ Also, since the social or economic costs of environmental degradation are difficult to understand and quantify, controversies that erupt surrounding the issues are seldom resolved and the issue often falls from serious consideration. For example, though the 1973 oil crisis poignantly demonstrated the security vulnerability of limited resource availability, and prompted many alternative plans, in most cases we have resumed previous patterns and many of the alternative schemes have faded from memory. The "crisis" over, people have resumed their wasteful ways. Although oil is still plentiful, other resources are rapidly being degraded without adequate forethought as to the future repercussions of the degradation. The planet seems such a huge and limitless place that its natural resources are difficult to envision as being limited or corruptible. Even despite sometimes clear scientific understanding of the threats involved with environmental destruction, serious problems remain in breaking what are legitimate environmental security concerns out of the realm of wishful thinking, or environmental extremism, and into more active and preemptive views of national security.

¹⁶Peter H. Gleick, "Environment and Security: The Clear Connections," *Bulletin of the Atomic Scientists*, April 1991, 17.

Though, disastrous oil spills or nuclear contamination are easily framed as threats and quickly acted upon, once cleaned up the threat is deemed over. When issues of global warming or biodiversity are examined, the legitimacy of the threat is often immediately questioned. This frame of mind was apparent at the 1992 Rio de Janeiro "Earth Summit" when former President Bush insisted that more proof is needed to show that the warming of the earth is not part of a normal climactic cycle and he flatly balked at a biodiversity treaty.¹⁷ Immediacy of the threat being difficult to prove, security planners still find it difficult to accept the fact that immediacy is apparent; it is, however, not in a form that is consistent with traditional notions of national security. Thus, although environmental issues in a broad sense have been recognized as having a role in post-cold war national security strategy, specifically which of the many diverse environmental threats pose legitimate and immediate national security threats, and specifically how to deal with them, remains undetermined. Though part of the reason for this is explained by the difficulties involved in broadening national security policy to include environmental security (which will be explored in the next section), the major reason lies in the controversy underlying the identification of specific threats and the extreme difficulty found in altering "the basic patterns of human activity that cause environmental degradation— from our reproductive behavior to our dependence on fossil fuels."¹⁸

1. Consensus

Environmental issues presents security planners with a tremendously interactive and interdependent set of variables. As Lawrence E. Susskind points out, "because of the complexity of natural systems, scientists have great difficulty sorting out which actions account for which outcomes. We are only just beginning to understand global ecological interactions well enough to know exactly how

¹⁷Ronnie Wacker, "Earth Summit Wrap-Up," *Display*, Summer 1992, 58.

¹⁸Maguire and Brown, "Bordering on Trouble," 21.

seriously to take some of the threats that currently loom large."¹⁹ Consequently, outlook regarding environmental matters is still largely determined by wealth, personal ecological philosophy or first-hand experience with environmental matters—and seldom involves a clearly understood scientific or even rational basis. This in large part has resulted in a sharp dichotomy existing between what has sometimes been called a "consensus" view on the environment and a more skeptical view which relies more closely on what can be scientifically defended based on available information or logic.

Of these two views it is the consensus that makes the headlines. It provides better copy and has generally predicted doom and gloom for the planet for years in the popular and scientific press. The consensus view is composed of good science, bad science, speculation, and a host of values and emotions tied to what mankind is doing to his environment. Books like *The Doomsday Syndrome* (Maddox, 1972), *The Limits to Growth* (Club of Rome, 1972), and *The Global 2000 Report to the President* (Clawson, 1981), which all predict impending environmental collapse if current trends continue, have an irresistible dramatic appeal and are highly convincing that now is the time to act to save the environment and mankind.²⁰ In large part due to this kind of literature and the press reports surrounding these findings, the consensus view has grown numerically large. For example, a Lou Harris poll found that in 1993, 82% of Americans believe that more needs to be done to protect the environment.²¹ Numbers like these, however, can be deceiving. Though this seems a large and politically powerful group, and in many respects it is, an unwitting problem remains the fact that environmental issues

¹⁹Lawrence E. Susskind, *Environmental Diplomacy: Negotiating More Effective Global Agreements* (New York: Oxford University Press, 1994), 12.

²⁰For a deeper discussion of the "dichotomy" in environmental literature, see Hugh W. Ellasesser ed., *Global 2000 Revisited: Mankind's Impact on Spaceship Earth* (New York: Paragon House, 1992).

²¹"Environmental Groups: As Green Turns to Brown," *The Economist*, 5 March 1994, 27.

are still as much subjective emotional matters as they are objective scientific realities. Seriously lacking in quantitative scientific proof or cost-benefit analysis, environmental matters are easily pushed aside by other, more easily definable concerns. In addressing quality of life as much as life itself, environmental concerns exist in a realm where even good scientific evidence to the contrary does little to persuade environmental advocates. Of course, nor do emotional appeals to protect the environment normally provoke the desired response from skeptics.²²

2. Controversy

This lack of specific proof, the emotional linkages, and a drive for continued economic development helped foster the growth of environmental skepticism. The skeptics generally view man's resourcefulness and ingenuity as great enough to overcome any ecological situation created. By always looking at "worst case" scenarios, often based on wrong assumptions, they see environmentally concerned scientists and the press as not to be taken at face value. Books like *Half Truths About the Future* (Dubois, 1981), *Globalony 2000* (Kahn and Schneider, 1981) and Cy Adler's 1973 satirical *Ecological Fantasies: Death From Falling Watermelons*, all take on the "eco-doomsters" and make a good case that perhaps impending environmental disasters are more hype than reality. Citing the general inability of scientists to logically and irrefutably link such things as deforestation or climactic changes to widespread health risks, the skeptics have raised concern over the spending of millions of dollars on what they see as unneeded environmental protection and the unwarranted subjection of the public to fear about such things. Anti-environmental activism arguing for "free market

²²To add to the confusion, experts in environmental studies now commonly use the labels "cornucopian" for optimistic outlooks seen in what I call the environmental skeptics and "neo-Malthusian" for pessimists like many environmental scientists and the press in the consensus view. These terms, however, are generally used to describe outlooks on market driven resources and are not all-encompassing.

environmentalism" (the abolition of all existing environmental laws and the deregulation of industry) have found close ties in resource industries and in government.²³ Despite small numbers, environmental skepticism has proven very powerful. This has resulted in the fact that even recent scientific evidence supporting the legitimacy and dire consequences of environmental degradation is often seriously challenged and sometimes discounted. Amid the context of this dichotomy of views, the widely-accepted notion that environmental concerns represent US national security threats comes face to face with serious challenges; both from scientific as well as more emotional points of view. This is especially true when it comes to diverting funds to combat environmental degradation and acting on nonmilitary threats when military threats remain. Despite its huge numerical advantage, the consensus view does not imply an inordinately powerful position.

Despite skepticism holding back many initiatives, ecological awareness has continued to grow: pushed along by the strength of the environmental lobby; the occasional environmental disaster and better and more persuasive scientific evidence on the current and future effects of environmental degradation. Especially in the last ten years there has been a shift in expert's perceptions of global environmental concerns. Where scientists used to perceive the biosphere as a relatively stable and hardy entity that would change only gradually in response to human affronts, now they believe that the behavior of environmental systems are often quite unpredictable and unstable.²⁴ Of particular note is the idea that

²³The war against greens has won support from a side range of conservative policy-makers in government and from several powerful newspapers. According to one article, this played a key role in the Senate's unexpected failure to ratify the U.N. Biodiversity treaty in October, the defeat of the re-authorization of the Clean Water Act and reform of the Superfund cleanup. From David Helvarg, "The War on Greens: The anti-enviro movement is growing— and getting uglier," *The Nation*, 28 November 1994, 648-649.

²⁴Thomas F. Homer-Dixon, "Environmental Scarcity and Global Security" *Headline Series*, (New York: Foreign Policy Association, Fall 1993), 10.

"constant pressure may not have a noticeable effect for a long period. But sooner or later the system's resilience or buffering capacity is gone and even a small additional pressure nudges it across a critical threshold."²⁵ That critical thresholds are near or have been reached, however, remains difficult to prove. The growing acceptance of this assumption, however, combined with new evidence of the continued spectacular growth in world population (pointed out in the recent UN Cairo summit), and the consequential accelerating demand for resources, are some of the reasons why levels of environmental concern continue to mount. As newer understanding of the effects of biodiversity lost and global warming have reinforced perceptions of the fragile interconnectedness of the biosphere, a more and better informed consensus opinion is emerging— one better able to counter the skeptics.

Despite this progression of environmental concern, the legacy of skepticism remains deeply entrenched. This is especially true in the developing nations of Latin America where other economic and domestic matters retain a much greater importance and environmental concerns take a back seat to development. In most of Latin America, to a much greater extent than in the US, the resolution of environmental concerns is set aside if no "crisis" or disaster can be clearly proven. Also, in the developing nations of the Western Hemisphere, environmental issues are still considered a rich world prerogative— problems to be addressed when development goals have been reached. And, any pressure to amend development policies from the outside quickly turns into an issue of national sovereignty. Unfortunately, the consequences of environmental degradation are particularly acute in Latin America. The extractive nature of most latin economies, their continued rapid population growth, and the nature of their tropical soils are but a few of the reasons that the costs of environmental degradation are greater there than in the US or Canada.

When former Brazilian President Collor de Mello told a gathering of

²⁵Ibid., 11.

businessmen in London that, "let us not forget that there is no worse pollution than poverty. Human rights and environmental concerns are meaningless in the absence of a global development strategy." He implied that development and environmental concerns are independent notions, and that development can precede environmental concerns. He was essentially sighting the path the industrialized, developed world took many decades ago; under different environmental circumstance and in a world lacking in environmental concerns. Such a statement is understandable coming from a man who represents a nation desperate to break out of the third world mold and emerge as a developed one. What is becoming increasingly clear, however, is that de Mello's ideas were only marginally true for the developed world, as it struggles with its own environmental nightmares, and totally unsound for a tropical developing world faced with a burgeoning population and exhibiting an unprecedented ability to cut down, burn out, sell off, and pollute its land. In many developing nations, environmentally sound "sustainable" development is actually the key to their economic success rather than a burden to it— here lies their comparative advantage. Much of the developed world was simply lucky. The nature of its resource base, climate, soils and a moderate technology to pollute its own land allowed it, in addition to the great wealth it amassed, to develop non-extractive based industries in time to turn its environmentally unsound practices around. Concurrently, its political culture finally, although begrudgingly and still skeptically, accepted environmental consciousness as valid and important which allowed adoption widespread notions of quality of life and environmental awareness. These ideas embraced environmental protection over development at any cost. The evidence pouring in from around the developing world indicates that sort of luck will not be repeated there. The hope that development will bring with it a holy grail of sound environmental practices seems to deny the historical record, current evidence and political culture of those regions.

Though absolutes are hard to find, it is reasonably apparent that the continued level of environmental degradation seen thus far is not as tolerable as it

once was even just 20 years ago. The world's capacity to destroy its environment continually increases in conjunction with growing world population—demanding more land and resources—and the increased technological ability to accelerate degradation and resource depletion continues at a rate unheard of just a few decades ago. In much of Latin America, even potentially sustainable resources such as timber and fish are being depleted at such a rate and manner that permanent ecosystem damage is risked. But, because of lingering uncertainty about where and when critical environmental thresholds might be crossed, resource dependency, debt problems, and a drive for development, definitive action to prevent the loss of sustainable levels is difficult to provoke. Nearly universally accepted by scientists and forward-looking defense planners, however, is the fact that in the future there will be no shortage of ominous signals from our environment. Even if no thresholds are breached and no dramatic environmental disasters occur in the near future we can be sure that environmental problems will remain as prominent issues on scientific, policy and public agendas.²⁶

In sum, although intuitively the US seems ready to accept the security dimensions of environmental degradation, what combination of immediacy and proof is needed to impel widespread action is difficult to determine. That this combination can be found and addressed before sustainable levels of destruction have been passed is the ultimate environmental security goal.

The call for environmental issues to be faced not merely from a rich world quality of life issue, as they customarily have, but rather from a legitimate US national security perspective is now hardly radical. Especially since it has become obvious that the rate of traditionally quoted environmental degradation (deforestation, pollution etc.) as well as the number of new emerging threats continues to increase. Also, although understanding the dimensions of the world's environmental problems has, in a sense, been under way for more than two decades, understanding environmental threats and acting to stop or slow it are

²⁶Ibid., 12.

two entirely different matters. Changing human behavior is a difficult and slow process. We cannot deny that many environmental threats first echoed twenty years ago remain and in many cases continue to mount. Adding fuel to the skeptics fire, however, is the fact that the kind of widespread environmental devastation many pundits warned has not yet been seen despite staggering jumps in energy consumption, carbon emissions, water consumption, fish consumption, land degradation and deforestation. "While the last decades have seen increasing environmental damage around the globe, for the most part this change has progressed slowly, one small change at a time."²⁷ In a few cases this slow progression has allowed the world to move to alternate sources as scarcities have emerged but, mostly in the developing world it has also allowed nations to exploit some of their last remaining resources. Despite this, that same slow sequential progression is often used as a testament to the validity of the skeptics view and the questionable legitimacy of many quoted threats.

Many questions remain unanswered regarding the extent to which we have already gone beyond sustainable ecological levels, without knowing it, and to what extent continuing to deny preventative action will impact security in the future. Establishing when thresholds will or have been exceeded and determining where instability of environmental systems will emerge in response to human inputs and what the resultant human response might be is still nearly impossible to predict. The future of environmental neglect are questions only answerable by efforts which are still grasping to understand environmental interactions. Today, it seems, environmental security is one of the few legitimate security concerns where intuition has at least as much to offer as scientific proof. The catch remains that when sufficient levels of proof and immediacy are finally apparent, sustainable ecosystems have often been destroyed. Since national security must plan for worst-case scenarios, in many cases we are overdue in planning to stop environmental degradation.

²⁷Ibid., 9.

Finally, the tenacity and determination of long-established or, in some cases, vested interests in resisting change in the national security arena makes controversy and conflict over environmental issues a fundamental fact of existence. It must be understood, however, that a conflicting set of interests and perceptions is not altogether bad. The track records of the skeptics and the consensus view are equally poor and misinformed. The success of a truly balanced environmental policy may well rest in no small part on the contradictions and tensions produced by these conflicting orientations. Any basic environmental framework must be flexible enough to allow for the consensus opinion to adopt more realistic and logically scientific points of view while the skeptics are availed of the non-provable, esoteric, interdependent aspects of environmental security. Though controversy will never completely depart these issues, to speed the response to the environmental threats already acquiesced in the current national security strategy and other literature requires that inaction or a lack of planning based on nothing more than an inability to define, prioritize or frame the threats be overcome. In order to do this, however, our national security framework must be broadened.

C. THE BROADENING OF US NATIONAL SECURITY STRATEGY

Though the term "national security" is a widely used phrase, the concept itself is a particularly difficult one to examine or identify with precision. Already in this discussion we have seen that it encompasses physical defense of territory as well as foreign policy goals of economic revitalization and the promotion of democracy. We have also seen that it needs to be broadened further to easily accept new nonmilitary threats. Though "weakly conceptualized" and "ambiguously defined", national security is nonetheless a politically powerful concept.²⁸

²⁸As Joseph Romm suggests, "any term that encompasses tools as diverse as nuclear bombs and educational policy . . . begs for a better definition" Romm, *Once and Future Superpower*, 52.

In its most basic form, Sam Sarkesian considers security a "state of mind" and national security "is the way people feel about themselves and the confidence they have in their leaders and the political system."²⁹ From this perception as well as the ambiguous nature of the issue it is understandable that the disputes and wide-ranging levels of confidence surrounding US leadership and the American political system have and will continue to evoke disagreements about national security specifics. This is especially true since the end of the cold war removed the singular national security focus of the prior half century. Prior to 1989, the unprecedented dedication to the policy of containment of the Soviet Union was strong enough that persistent disagreements did little to alter the basic national security framework. It was also during that time that the phrase "national security" became inextricably associated with military security. This was primarily because "the principle 'external' threats to the American way of life—that is, to our security—quickly came to be seen as the spread of communism and the growing military capability of communist countries."³⁰ So strong was the concept and so unsure are we now of the future that in many ways our traditional military security framework remains today.

Sarkesian adds that traditionally, "US policymakers. . . tend to equate the ideals of American democracy with the realities of the existing international security environment" and, "they tend to analyze US national security posture in terms that assume and demand immaculate behavior and an immaculate system, while often glossing over the realities of the world."³¹ He regards American national security policy as zero-sum game oriented. Issues are either black or white, moral or immoral, good or evil. Long term solutions are often rejected in favor of "quick-fix, short-term, do-able frameworks. That is, we tend to see an

²⁹Sarkesian, *U.S. National Security*, ix.

³⁰Romm, *The Once and Future Superpower*. 42.

³¹Sarkesian, *US National Security*, ix.

issue only after it becomes a national security problem and to respond to that particular problem in a traditional fashion: identify it, find the best solutions, apply them and 'fix it,' all according to conventional notions and expectations."³²

National security strategy during the four decades of the cold war solidified these notions. The clear threat embodied in the American "state of mind" by the Soviet Union was dealt with by the psychologically rigid, "can-do" national security strategy of containment. As John Lewis Gaddis points out, "to a remarkable degree, containment has been the product, not so much of what the Russians have done, or of what has happened elsewhere in the world, but of internal forces operating within the United States. Given this 'inner-directed' character, it has, for all its contradictions, mutations, and irrationalities, been a surprisingly successful strategy"³³ So successful and pervasive was this mindset that these traditional military tenets of US national security strategy remain predominant today despite the end of the cold war. And yet, while successful in checking "Soviet expansion," in many regards this military oriented national security policy failed to adequately anticipate and act on other problems now recognized as principle factors leading to other national security risks.³⁴ In recent years the recognition of new, multidimensional threats have brought with them renewed attention to the global perspective of security. "That is, the whole idea of a global commons, with international politics being viewed as not a zero-sum game among states, but rather as a collective-sum game involving all of humankind."³⁵

³²Ibid., x.

³³John Lewis Gaddis, *Strategies of Containment* (New York: Oxford University Press, 1982), 357.

³⁴Butts, *Environmental Security*, 2.

³⁵John Holdren, Thomas Homer-Dixon, Elizabeth Kirk, Ronnie Lipshutz, and Thomas Naff, "Environmental Dimensions of Security," *Proceedings from a AAAS Annual Meeting Symposium 9 February 1992*, (Washington D.C.: American Association for the Advancement of Science, 1992), iii.

This perspective was large largely absent from national security thinking prior to the end of the cold war.

The end of the policy of containment functionally ended the suitability of a traditional, rigid national security orientation. If they truly ever were, today's national security considerations are neither immaculate nor rigid and dominated by both military as well as nonmilitary threats. Through forty plus years of containment, however, US strategists and to some extent the public became accustomed to associating national security to a great, unifying, and ultimately successful theme. This is partially why, half a decade after the end of the cold war, the call for a new national security strategy that adequately addresses a "new world order" can still be heard. Indeed, because of the difficulties and uncertainties involved in establishing a new strategy some still believe that the US will lack a new strategy until a containment-like focus can be found.³⁶ Such a watershed was the end of the cold war that little consensus on the overarching nature of the new security strategy currently exists. In the words of Professor Kenneth Jowitt, we have "left a world of well-defined, structural boundaries for a world of ill-defined frontiers."³⁷

The demand for a new strategy is great, however, and "based on far more than a desire for tidiness: without an accepted set of guidelines governing US foreign political and economic policy and US military strategy, coherent and effective responses to future challenges will be all but impossible to devise and implement."³⁸ Lacking these guidelines, if no broadly accepted strategy exists then a long term perspective will always lose out to short term answers. Since

³⁶Norman D. Levin, *Prisms and Policy: US Security Strategy After the Cold War* (Santa Monica: RAND, 1994), 15.

³⁷Kenneth Jowitt, "Disintegration" a lecture given at the US Naval Postgraduate School, Monterey, Ca, August 1993. Taken from Ambassador Rodney Kennedy-Minott, "Environmental Degradation as a National Security Problem: Armed Forces" , p.1.

³⁸*Ibid.*, 3.

many environmental threats are particularly time-critical, this lack of a coherent security policy including environmental issues is especially risky.

Most environmental concerns, except in rare cases such as the Chernobyl accident or the Exxon Valdez oil spill, seldom appear as immediate threats subject to "quick-fix, short-term" solutions. Transnational environmental degradation normally stems from long-term economic practices where villains are seldom clear and the system is far from immaculate. And, threats resulting from years of degradation are rarely subject to a quick fix. The difficulty in expressing these slowly-evolving environmental concerns within our current traditional military national security structure hampers greatly our ability to deal with them. This is precisely why national security must be broadened to allow environmental threats to be easily understood as national security issues.

I have already discussed how skepticism and controversy are large factors in why environmental issues currently lack adequate definition as threats. This controversy and difficulty framing environmental threats are why many of the widely-divergent environmental issues are still generally grouped together as if they represent the same type of threat. Although grouping is an easy way to acknowledge environmental concerns, while sidestepping controversy, it does little to address the issues. We cannot hope to solve all environmental threats. We must recognize that only a few constitute US national security concerns that we will be willing or capable of solving. It must also be underscored that all environmental issues are not created equal. Though all are housed within a interconnected system called the biosphere, they are not all security threats and each demands an individual assessment. Since fundamentally an environmental security strategy must be clear, rational and workable into a parsimonious plan, to do so we must recognize that specific emphasis on a few particular threats can, and indeed has to exist within the broad and interconnected context of environmental systems. The extreme complexity of the systems themselves ought not be a barrier to addressing some of the clear threats. It is important to avoid slipping into "environmental determinism", or that human nature is impossible to

change and that environmental degradation is an inescapable and inevitable thing.³⁹ Here the skeptics point of view that man can alter his environment for the better as well as for the worse must be accepted. Despite the dire outlook often encountered, environmental systems are quite adaptable if a timely effort is undertaken to reverse the degradation. Since, however, most environmental issues must represent a clearly demonstratable and immediate threat before they are acted upon, the real and most time-critical threats must be cleared out of the controversial whole and displayed. The catch is exposing the threats as immediate and arresting the environmental degradation before it is too late for sustainable use to be continued. Immediacy in this sense means more than just a threat today, rather, it includes the notion that if nothing is done soon permanent damage will result.

In a national security sense we are continually confronted with the problem that "The less apparent a security threat may be— whether military or nonmilitary— the more that preparations to meet it are likely to be the subject of political controversy."⁴⁰ Therefore, before the US can hope to begin adequately addressing environmental security requires that specifically which of the many environmental threats fit national security criteria, and why and how they are threatening, must be established and logically demonstrated. Grouping threats must give way to individual treatment, and their links to US goals, or fears, needs to be established.

1. The Security Framework

The foundation of environmental security strategy for the US must begin with the accepted systemic changes that have recently occurred in international relations. This is the notion that national security interests have fundamentally

³⁹Homer-Dixon, "Environmental Scarcity and Global Security," 13.

⁴⁰Richard H. Ullman, "Redefining Security," *International Security*, Summer 1993, 135.

split from one dominant threat to a number of threats arising from multiple sources. For example, though there still exists a very real threat of a resumption of hostilities with Russia, the growing potential for weapons of mass destruction falling into the hands of ambitious countries, or groups seeking hegemonic leadership via these weapons, is a relatively new but very real threat. Also, a still new but largely accepted threat stems from illicit drugs streaming in from abroad. Although quite different from one-another, what these examples share is the fact that in the American psyche they have been framed in a way that they appear as immediate threats. To combat them traditional national security tactics, including intelligence and military forces, have been mobilized. A rational workable strategy, in essence, now exists for these issues. The broadening of US national security strategy required to include them was relatively uncomplicated because of the ease in tying them to traditional national security perceptions and solutions. Regional stability undermined by the growing world imbalance in population and development between the "rich" north and the "poor" south is another new threat, however, where immediacy is more difficult to prove and a traditional solution is not as appropriate— and hence few strategies currently exist. The very real threat from the deterioration of the earth's environment shares this dubious position. The national security broadening required to include these issues demands a liberal acceptance of new types of nonmilitary threats as well as the adoption of non-traditional tools and approaches.

As stated previously, environmental concerns are difficult to introduce into a broadening national security policy because of the many overlapping, interactive and unknown forces at work in the biosphere. Though understandable, due to the lack of knowledge surrounding some specific issues, this is precisely why grouping a large number of environmental threats together under the same heading is so troublesome. While the specific interactions leading to many of the environmental issues cited remain a mystery, the impact of others is more clear. It is these threats, already manifest, that must be singled out, evaluated, and specifically enumerated in security policy. Since too many environmental issues have

unknown interactions, and thus invite controversy and inaction, at present most of these must be deleted so that the few remaining threats can be given the attention they demand. Unfortunately, this line of thinking is often seen as tantamount to waiting until an environmental disaster strikes before acting — a traditional tenet of US national security planning. The problem remains that what constitutes an environmental disaster, besides an oil spill or nuclear meltdown, has yet to find a definitive definition. Since many feel that we are already ignoring many disastrous environmental situations, then narrowing our scope only means prioritizing existing crises. This approach, however, must be understood to only represent a beginning. As I have eluded earlier, "The real challenge is to go beyond viewing environmental issues as discrete problems, and begin moving to the basic economic and social reforms that are needed if we are to save the planet."⁴¹ Though an economic and social focus is the eventual goal, this does not mean that environmental issues are not national security concerns. They are merely nonmilitary concerns demanding non-traditional security solutions. We need a functional way in which to start addressing environmental threats by cutting through the controversy surrounding the unknown nature of many of the quoted threats and the difficulty in placing them within the national security strategy. This priority limiting procedure is also a necessity in financially difficult times. Some long term perspectives must, unfortunately, wait until the process of dealing with the immediate threats gives security planners the tools to address the long-term issues. By establishing a rational beginning, the US can begin to move from conceptualizing the threats and responding to disasters to finally shaping a more holistic and environmentally healthy policy. "The environment can then move to the center of economic decision making, where it belongs."⁴²

⁴¹Lester R. Brown, Christopher Flavin and Sandra Postel, *Saving the Planet: How to Shape an Environmentally Sustainable Global Economy* (New York: W.W. Norton & Company, 1991), 13.

⁴²*Ibid.*, 11.

2. Why a National Security Perspective ?

At this point it may seem strange to even ask this question since the assumption all along has been that environmental degradation does indeed pose a US national security threat. It still does. However, given the previous discussion on the dichotomy of views regarding the environment, the necessary limitations of a security perspective, and the difficulty involved in broadening US national security policy, we must re-visit this question.

Despite the supposition that environmental security is a widely accepted notion, the mere mention of environmental issues as national security concerns continues to elicit strong criticism even from some who consider themselves environmentalists. For example, Daniel Deudney feels that environmental security imbues "cycles of alarm and complacency [that] are not likely to establish permanent patterns of environmentally sound behavior, and 'crash' solutions are often bad ones"⁴³ Consequently, he appraises national security strategy as a negative way to address environmental issues. In a similar vein, Ronnie D. Lipshutz of the University of California at Santa Cruz feels that by treating environmental degradation and its consequences as a problem of security— and, more specifically, *national security*— will create more problems than are solved because of the way the problems are framed.⁴⁴ Framing environmental degradation as a national security issue may, in his view, imply the use of a particular set of tools (namely the military) that are entirely inappropriate to the task at hand. Though this criticism may at first seem valid, since national security strategy appears predisposed to only respond to disasters and a military approach is indeed an improper way to confront many environmental issues, these critics miss the fundamental necessity of addressing certain environmental issues from a security perspective. This understanding is crucial to the environmental security

⁴³Daniel Deudney, "Environment and Security: Muddled Thinking," *The Bulletin of the Atomic Scientists*, April 1991.

⁴⁴Holdren et. al., *Environmental Dimensions of Security*, 1.

debate.

US national security strategy is set up to represent "both Americas interests and our values."⁴⁵ Though some have argued that following a dated and rigid strategy is precisely why America faces some of its most serious problems today, and that it can only deal with short term problems which environmental issues are not, this debate is shortsighted. The scope and nature of transnational environmental degradation demands that it becomes an issues of US foreign policy and international negotiations. It is issues of national sovereignty, international law and interstate trade that put transnational environmental issues squarely in this light. They are immediately foreign policy concerns representing new, unique, and complicated issues. Solutions, however, need not always be framed in a military light. Indeed, other tools are demanded and, in fact, must take precedence to address environmental issues. Transnational environmental threats demand a new agenda that is sensitive to the unique needs posed by environmental degradation. If other means fail, however, worst case national security planning demands that we be prepared to protect our environmental security by any means at our disposal. This could involve military action. This is also not to say that some military applications are not an appropriate way to address many environmental problems — in many cases such as maritime monitoring and sample gathering they represent the best way.⁴⁶

At this point we must also be careful not to confuse transnational environmental threats with other environmental concerns that can be effectively dealt with by education, legislation and an evolving value system that appreciates environmental protection. This is precisely why domestic environmental issues do

⁴⁵White House, *National Security Strategy*.

⁴⁶For an excellent look at the US Navy's capabilities in the environmental security arena see, National Security Planning Associates, "The Environment & National Security: The U.S. Navy's Capabilities and Requirements," A study submitted to The Deputy Chief of Naval Operations (Logistics) and The defense Nuclear Agency, September 1993.

not represent US national security threats even though they may fit the same criteria and pose some of the same risks. Compared to purely domestic environmental degradation, transnational environmental degradation is simply not subject to the same solutions and requires different tactics. This is a subtle yet important distinction that points to why transnational environmental issues fall under the rubric of US security policy while domestic degradation does not. Also, we must not forget that "economic revitalization" is a principle goal under the national security strategy. Economic emphasis is, by definition, a security consideration but one which today has only a small military component. The economic components of environmental degradation will be discussed later in this paper.

Though demanding nonmilitary tools to counter, this simply does not mean that environmental issues do not constitute national security threats. Though economic and political considerations must eventually be the driving force in environmental protection we must not forget that national security encompasses a wide range of tools each of which can play a large and pivotal role.

Environmental security is a marriage between national security goals and foreign policy and, because of its diversity, complexity and scope, will require a variety of means and tactics be employed to achieve it. Though economic and social elements will eventually overshadow our current military security orientation, and indeed the two perspectives are intertwined, all these perspectives currently lack a comprehensive understanding of how to achieve environmental security. There is no reason to think, however, that diplomatic action, military capacity and economic pressure cannot all be used in conjunction in a coherent policy.

When, for instance diplomatic efforts fail to break through issues of sovereignty, or the limited usefulness of the military leaves the economic tool as the primary means of securing environmental security then that tool must be used. We can surmise, however, that left on its own only when economic development cannot proceed without environmental protection (either due to legislation or scarcities) will the economic perspective fully assert itself. Naturally

occurring, this is quite a way off. The economic and social cost advantage of environmental security are notions only beginning to be realized and the ties between environmental protection and economic prosperity are a long way from being understood on a global level. Forcing environmental degradation into a national security light can help speed up this process. Economic pressure then can be used as the needed element to force the environmental issue. And, where economic pressure does not work political and, if needed, military pressure might. To deny any one of these elements risks undermining our capability to achieve environmental security.

If the National Security Strategy represents predominant interests and values (despite its still evolving character) then it remains an appropriate framework from which to confront transnational environmental degradation. Though its traditional structure may slow progressive thinking, it is a governmental reality. National security strategy will continue to evolve to accept nonmilitary threats but probably not in a revolutionary way— at least concerning the environment. Like it or not, this political reality must be understood by those concerned with environmental protection. Despite this, if transnational environmental issues fit national security criteria then placing them there offers the best hope for immediate action. Reconciling them as national security priorities is the only way to speed up policy evolution to where enough resources and pressure can be brought to bear to influence other nation states. This will include military, economic and political measures. Furthermore, labeling a problem a "national security threat" has in the past implied that it takes precedence over other problems and allows political leaders to marshal the "full capabilities of the American System."⁴⁷ And, since tactically a national security vocabulary may be more conducive to alerting and fund raising purposes, then

⁴⁷Romm, *The Once and Future Superpower*, 56.

framing environmental threats as national security issue is appropriate.⁴⁸

A final point to note is that even in a traditional sense, the US national security strategy has faced long-term threats. "The doctrine of containment, and the idea of the Cold War, were themselves based on the notion that US national security depended on victory in a long-term struggle with the Soviets."⁴⁹ It was former Secretary of State Dean Acheson in 1947 who stated: "We are in a period now I think of the formulation of mood. The country is getting serious. It is getting impressed by the fact that the business of dealing with the Russians is a long, long job."⁵⁰ Since the nature of transnational environmental degradation demands that it be dealt with as a long-term security objective, that policy simply needs to be careful to avoid "cycles of alarm" and focus on the "long, long job" ahead. This means that environmental threats need to be framed as permanent threats to US national security; not subject to quick solution but rather focusing on a continuous effort.

3. The Security Criteria

Although the concept of national security is vague and subject to many interpretations, some general guidelines are still easily found. For instance, it follows from the preceding discussions that in order to establish working criteria from which to evaluate transnational environmental threats the standing and traditional aspects of national security must be accepted. Since environmental issues have now entered into the security calculus, to address them they must be framed in such a way as to reflect these traditional and widely-acceptable concerns. To avoid further delays means that immediacy must be proven and, to appease the public, some measurable return should be apparent. In terms of the

⁴⁸Olav Schram Stokke, "Western Environmental Interests in the Arctic," *Centrepiece*, Number Twenty-One, Winter 1991-92, 1.

⁴⁹Romm, *Defining National Security*, p. 99 n80.

⁵⁰*Ibid.*

three central goals of the July 1994 National Security Strategy discusses earlier, environmental security aspects should tie into at least one, if not all, of these goals. For example, the military can and, if appropriate, should be involved in some capacity. Economic revitalization either in increased trade, protected markets or increased efficiency should be demonstrated, and democracy can be promoted if regional stability is enhanced. Indeed, promoting regional stability remains the cornerstone in all three of these traditional goals. Simply, environmental elements must be clearly shown to correspond to traditional tenets of US security and foreign policy objectives.

As Peter Gleick of the Global Environmental Program at the Pacific Institute accurately points out, "What is required is not a redefinition of international or national security, as some have called for, but a better understanding of the nature of certain threats to security . . . "⁵¹ Environmental security must not be seen as an anomaly to traditional national security missions. It is apparent that environmental concerns are here to stay and will only grow in importance. Their inclusion in national security planning is, therefore, a natural evolution. But, as I have pointed out, this is a very slow and controversial. In order to clarify issues, limit controversy and help foster more immediate action, environmental concern's direct ties to these traditional goals needs to be clearly shown.

Beyond this, however, forward thinking into an unknown arena demands that new notions of security are not neglected to help define and evaluate the threats. As previously stated, regional instability is a primary consideration. Expressed in the NSS and other reports, the problem with instability is that with all its "permutations and variations" a concise definition or instability is nearly impossible to create.⁵² Environmental degradation as a primary or contributing

⁵¹Ibid., 33.

⁵²Minott, "Environmental Degradation As A National Security Problem," 2.

factor here needs to be made clear. Additionally, although Richard Ullman is among those who believes that defining national security in traditional terms "conveys a profoundly false image of reality," his "re-definition" of security is still helpful in terms of broadening without necessarily re-defining policy.⁵³ For example, he suggests that a national security threat is an action or sequence of events that:

1) Threatens drastically and over a brief span of time to degrade the quality of life for the inhabitants of a state, or 2) threatens significantly to narrow the range of policy choices available to the government of a state or to private nongovernmental entities (persons, groups, corporations) within the state.

Ullman's definition has been widely quoted as a model to show a new direction that a post-cold war policy, including environmental security, should follow. This view accepts the traditional demand of immediacy — "over a brief span of time"— but introduces a new notion in "quality of life for the inhabitants of a state." National security focusing on an individual or regional "quality of life" perspective, rather than an all-encompassing territorial or population wide perspective, is an element which has important environmental security implications. As regional conflict and instability have been emphasized with the end of the cold war, the notion that threats to the US may impact only one region's quality of life rather than the nation as a whole needs to be included in the security equation. This is especially important regarding environmental threats since, though often global in character, certain border regions usually face the brunt of the impact.

Though Ullman's is not the only attempt to expand national security to include new global realities, his is the most widely-accepted representative of the

⁵³Ullman, "Redefining Security," 129.

recent attempts.⁵⁴ What they all share is the demand that security considerations that are felt aesthetically as well as explicitly, (like quality of life or national well-being) are included in new security calculations. Although these notions have in the past paled in comparison with many traditional military notions of national security, new global realities including the environment are demanding new security considerations.

While these basic criteria are necessarily rough, some characteristics remain clear while others will depend on specific circumstances. Additionally, since the number or ratio or elements which need to be applied to evaluate environmental threats is difficult or impossible to establish, since there are so many unknowns, then the issues resulting from this most basic analysis will require a much deeper examination in the future. Although immediacy of a threat within a fairly short time parameter must be demonstrated, a wide range of other factors attributable to important regional differences can be included in the consideration. Therefore, these criteria are also fully open to expansion to fit regional needs.

What has been presented thus far are some of the issues surrounding environmental degradation which provide the basic understanding needed to form a framework for environmental security. It is to these basic tenets that other perceptions of environmental security can be tied. Also from this discussion seven basic criteria have emerged with which to evaluate issues. They are: 1. effect on regional instability 2. the required demonstration of immediacy, 3. linkages to threats arising which demand a US military retaliation, 4. linkages to America's

⁵⁴Anyone trying to define environmental security is, in essence, trying to push open the framework of national security. For instance, The Institute for World Economy and International Relations and the Woods Hole Oceanographic Institution conclude: *Environmental security is the reasonable assurance of protection against threats to national well-being or the common interests of the international community associated with environmental damage.* Also, a good survey of many other attempts at re-defining national security can be found in Romm, *The Once and Future Superpower*, 54.

economic revitalization, 5. the ability to promote democracy, 6. effects on quality of life or national well-being, and 7. influence on limiting the range of policy choices available to the government or private non-governmental entities within the state. Though overlapping, interconnected and in some sense all-encompassing, it is in tying these basic national security criteria to specific environmental issues which will determine whether or not those issues constitute US national security threats. And, it is to these criteria that environmental degradation issues must be compared and clear causal ties drawn. Before we can begin to look at individual concerns, however, some issues and definitions must first be made clear.

4. Issues and Definitions

The issues that I chose to evaluate represent the widely-quoted environmental themes listed in the literature surrounding environmental security or expanded notions of US national security. Most have been brought up in the previous discussion and all afford potential threats to the United States. Since the interdependence and underlying causes are diverse and often still unknown, general themes are a necessary beginning. Of course, because most issues interrelate, attacking one or several causes may also solve other effects. The key remains stopping endless cycles of environmental degradation so that unforeseen, and potentially devastating repercussions are avoided. Unfortunately, the amount of understanding surrounding the carry-over effect of solving environmental problems is even less well known than the effects of continued degradation.

Though environmental degradation is a worldwide phenomenon, the vast majority of the environmental security implications for the US stem from our own Hemisphere. Also, many problems associated with environmental degradation are not recognized well in a global setting and the greater number of countries involved makes global agreements more difficult to achieve. Because of this, consideration of threats is limited to only those inherent to the Americas. Limiting the scope in this manner both enables a more precise evaluation of the

impact of environmental degradation on the US and allows for more tangible ways to address the degradation where US hegemony is the greatest.

Though a holistic systematic approach is the ultimate environmental security goal, it is imperative that we begin to solve some of these issues before sustainable use and crucial ecosystem integrity is lost. Therefore, the most important of these issues demands individual attention until the interrelations manifest themselves and the resultant effects of trying to solve the degradation are understood. As previously stated, grouping the diverse threats together, despite their interconnectedness, precludes the specific national security implications of individual threats from emerging clearly and the vast scope of such grouping lends a deterministic air to the project. My purpose here, therefore, extends to only those individual issues which represent priorities under current national security realities that can effectively be dealt with today. Though to some extent environmental degradation happens whenever man enters or influences an environmental system, for this kind of analysis we must also be careful how we use some terms.

For this study, I use Thomas Homer-Dixon's definition of environmental degradation as that man-caused damage to the basic natural resources necessary for survival. Though basic survival is indeed often threatened by environmental degradation, new notions of security make it appropriate to widen the term "survival" to include both length and quality of life for which Americans have become accustomed. Though "quality of life" is itself a vague term with far-ranging connotations, in this case I limit it to objective notions of health and safety rather than subjective longings for a pristine environment. This definition essentially means that a sustainable, non-polluting level of resource use does not constitute environmental degradation. Soils, water or forests, for instance, remaining substantially undamaged so that they can continually provide produce, fish, timber and recreation for generations are considered examples of sustainable use. When, however, environmental systems or natural resources are depleted or misused to the point that sustainable use has or risks becoming impossible, then

it constitutes environmental degradation. If that environmental degradation also impacts one or more of the national security criteria previously described then that environmental issue can be considered a US national security threat.

Although environmental "accidents", like large oil spills or nuclear contamination, easily fit as "man-caused damage to natural resources necessary for survival," and certainly can degrade quality of life, I hesitate to include them as environmental degradation. Polluting and transportation industries need to be regulated to avoid accidents— this has already been widely accepted. If that is done effectively then accidents cannot be treated as national security concerns. Though stricter regulations in these areas may be needed, the force of a national security framework is not needed. This unless the resultant effects are endemic, and then by definition are not accidents, then they are excluded from this discussion. So, though environmentally destructive accidents are a great cause for concern they do not generally constitute national security threats. This thesis is more interested in the elusive, controversial and often overlooked everyday practices which contribute to environmental degradation and which constitute national security threats. In any event, environmental accidents should be considered a "special case" of environmental degradation.

What follows is a brief description of the primary environmental issues which have been considered threatening to the United States. For ease of discussion, the issues are broken up into three categories. For the first two I follow Joseph Romm's differentiation of transnational environmental or resource problems that threaten US security in a traditional sense followed by those that threaten the US more broadly. By traditional, I mean those issues which seem to threaten US territorial integrity, natural resources, or which pose a dire short term threat to a significant portion of the population. The second or broader category concerns itself with quality of life issues and generally looks at longer-term threats. Finally, since primary causes of environmental degradation represent only part of the environmental security story, I also look at some of the social effects of environmental degradation and apply the same criteria.

III. ENVIRONMENTAL SECURITY THREATS TO THE UNITED STATES

Among the more established, and often doubted, environmental threats to US national security are the much touted trans-global dangers posed by global warming, the hole in the ozone layer, acid rain, loss of genetic biodiversity, and air pollution. Increasingly, however, new and more regional environmental threats have intruded on the national consciousness. Within the context of a post-cold war world, it is these threats, no less dangerous than the others but appearing more immediate, that have helped push the environment as a security concern past the veil put up by the skeptics and which seem to demand consideration now. Among these new threats we find the increasing potential conflicts over limited fresh water supplies, border pollution, environmental refugees, environmental terrorism and the threat of peasant uprising with environmentally driven causes. As the world is becoming increasingly interdependent both environmentally as well as economically, the number of transnational environmental concerns continues to mount.

Although to some degree or another all of these environmental issues threaten the United States, it is the latter concerns which come closest to traditional security threats. For instance, acid rain has destroyed plant and animal ecosystems in the US for many years and has done untold damages. Though widely reported, acid rain concerns are minor compared with the concern put toward resolving the current immigration crisis. If a clear environmental link between the Haitian exodus, for example, can be found and the same trends risk spreading to other Caribbean and Latin American nations, the notion that this type of environmental threat demands a security consideration appears more immediate than acid rain. Illegal immigration is an issue that has been framed in such a way that its immediate security implications have been examined and, as opposed to issues like acid rain, accepted. If environmental degradation can be shown to be a clear culprit in this emigration, then its security implications will gain legitimacy. Whether or not the environmental link to emigration is a strong one, however, still has yet to be determined. This example shows us that how the

threats are framed is vitally important, and by showing clear causal ties to accepted national security concerns legitimacy for environmental threats can be gained.

Recently, in Chiapas Mexico a peasant uprising emerged from one of the most economically and environmentally eroded parts of Mexico. That rebellion gathered surprising strength and support throughout Mexico and, though now mostly defused, risks coming alive at any time. The potential of hordes of refugees swarming over the border from Mexico in the wake of a full scale civil war, with environmental degradation as a contributing factor, is another example of an environmental security issue demanding evaluation. Both of these examples hint at what may be the most pressing of all the environmental security concerns facing the United States. As soil is depleted and either deteriorates or leaches away, water supplies fail and forests and grasslands are consumed, developing world economies can begin to falter and decline. Since already more than 40 percent of US exports go to the developing world, this process can have serious consequences for the future of the US economy.⁵⁵ In addition, payment of the billions of dollars in outstanding loans made to the developing world by U.S. banks depend largely upon the continually improving economic performance of the debtor countries.⁵⁶

Thus far I have provided broad strokes in terms of what needs to be considered when evaluating environmental concerns. We can see quickly that environmental ties to what can be considered security concerns cover a wide range of diverse issues. These include a broad context from primary sources of environmental degradation to social effects and from more traditional to newer security considerations. Many of the effects, in turn, can provide the source for additional degradation in a destructive cycle. What may begin merely as a quality

⁵⁵Norman Myers, "Environment and Security," *Foreign Policy*, Spring 1989, 24.

⁵⁶*Ibid.*, 23.

of life issue can become a traditional national security threat if degradation progresses to the point where social upheaval or mass migration takes place. The interconnectedness of the environmental systems as well as human responses to ecological pressures cannot be overemphasized.

We have also seen that to avoid controversy surrounding the specific and poorly understood environmental threats, while still admitting the importance of the entire phenomenon, the temptation to group all environmental threats into one category is great. By framing environmental security concerns too broadly, however, we limit the influence the term conveys to a particular problem and our ability to confront the issue. Since I argue that we need to focus on specific areas if we hope to begin engaging environmental problems, then we must narrow our scope to only those problems which fit specific criteria and represent defensible threats. To that end, the next section will examine several environmental issues to demonstrate how only certain problems can be expressed as national security threats.

A. TRANSNATIONAL ENVIRONMENTAL OR RESOURCE PROBLEMS THAT THREATEN US SECURITY IN A TRADITIONAL SENSE

I begin with a few examples of threats that are more acute and often regionally focused. These issues primarily involve resources which can be claimed directly by the US or, whose effects directly threaten US citizens. It must be noted that some seemingly obvious issues which would be included in this category are omitted. These include the environmental consequences of warfare and eco-terrorism. Though some authors consider the environmental effects of warfare a separate and distinct category, I feel that this only confuses the issue and these threats should not be considered separate from the threat imposed by the conflict itself.⁵⁷ War is by definition a national security concern, its plethora of security

⁵⁷A good example is found in Susan D. Lanier-Graham, *The Ecology of War: Environmental Impacts of Weaponry and Warfare* (New York: Walker and

threats do not need further differentiation. Although the military itself and mobilization for war can represent tremendously polluting activities, and hence fit the definition of environmental degradation, these are best considered domestic concerns until war erupts— and then are by definition national security threats. In a similar manner, nor does eco-terrorism fit the focus that I have established. Eco-terrorism is terrorism. It is by definition a national security threat.

The following discussion's main concern is on issues which have had a more difficult time establishing themselves as national security threats. These are the hidden, insidious threats; the long-term by-products of short-term thinking and poor economic planning rather than overt acts of aggression. In order to be accepted as national security threats, however, these issues must be presented in such a way that clear causal links to national goals and values are established. Although this brief examination will require much more in-depth analysis later, I am merely looking to show how environmental ties to the basic national security criteria can be demonstrated. This in order to get a feel for the true extent and nature of environmental security.

1. Border Pollution

Pollution is certainly a world wide phenomenon. The range of discussion possible surrounding its implications on the US in general are so vast that an in-depth analysis will require a massive effort. In terms of identifying some basic environmental security implications of pollution, however, some general impressions can easily be found. First, without getting into the debate about how much of the problem can be linked to US owned industries in Mexico or the Caribbean which cause much of the pollution (a subject which will certainly blur the focus of this argument) we must concentrate instead on where heavy metals, chemicals, radioactive materials, mineral tars, petroleum chemicals, refined petroleum, manufactured fertilizers and other polluting products enter or impact

Company, 1993).

the US which threaten its security under the criteria established. Or, more clearly, are there instances where pollutants entering or effecting the US can be clearly shown to threaten the US and which are not subject to domestic control. Though a comprehensive evaluation of this question will eventually need to be undertaken, a few examples stand out.

Though many airborne and seaborne contaminants pose serious risks to the health and quality of life in the US, the border regions between the US and Mexico provides the clearest examples of a pollution-related environmental threat. Border rivers are an especially important case. The Rio Grande, the largest of the rivers shared by the US and Mexico, is a good example of a river currently under siege by pollution. Dissolved metals, including mercury and aluminum, are routinely found in large quantities in the river water. Due to discharge of untreated sewage in Nuevo Laredo, the river is unsafe for 25 miles downstream where fecal contamination levels often exceed, sometimes by a factor of a hundred, standards established to protect public health.⁵⁸ Since the Rio Grande provides the primary source of the drinking water used in large areas surrounding the river, these contaminants present a serious health threat to residents— either through ingestion, contact with polluted water, or respiration of volatile chemicals as they evaporate.⁵⁹ In the Brownsville area, unexpectedly high rates of spina bifida and other related birth defects have been noted with pollution as the primary culprit. However, "Like most medical problems attributed to pollution, the causes of the birth defects in Brownsville are almost impossible to document; there are too many factors to isolate."⁶⁰ In addition to the health risk associated with drinking water,

⁵⁸John Cavanagh, John Gershman, Karen Baker and Gretchen Helmke, *Trading Freedom: How Free Trade Affects Our Lives, Work, and Environment*, (Montpelier, Vermont: Capital City Press, 1992), 68.

⁵⁹Ibid., 69.

⁶⁰Michael Parfit, "Troubled Waters Run Deep," *National Geographic*, Vol. 184, No. 5A, 1993, 82.

contaminated water is routinely taken from the river to irrigate crops. This subsequently poses a health threat to both agricultural workers and consumers of agricultural products harvested from those fields.

In addition to the Rio Grande, the Rio Nuevo/New River flowing from Mexicali Mexico is another environmental catastrophe. Known today as "the US's dirtiest river, perhaps the most polluted stretch of river in all of North America," the New River crosses into the US at Calesico, California and flows all the way through the Imperial Valley to the Salton Sea, California's largest lake.⁶¹ With pollution so bad the people are advised not even to go near the river in some places, the river water contains "every disease known in the Western Hemisphere", and over a hundred toxic pollutants have been detected in the waters including PCB's, vinyl chloride, and other chemicals that are either acutely toxic to humans or are known carcinogens.⁶² Including the Tijuana River, which is also now considered unfit for any use and which has been implicated in the contamination of San Diego beaches, these all represent an immediate and acute threat to US citizens living along or near their banks of these rivers or who consume agricultural products irrigated with river waters. Additionally, any large-scale outbreak of disease stemming from these rivers on either side of the border could migrate into much larger areas of the US. The national security demand to address the cleanup of these rivers primarily surrounds the immediate threat to the safety and quality of life for border residents.

Looking at other criteria, though specific instances where regional stability was clearly undermined by pollution are difficult to find, the notion that pollution is a factor in regional disagreements within other Western Hemispheric countries can clearly be seen in the large metropolitan areas around Mexico City, Rio de Janeiro and Sao Paulo. Although pollution alone does not currently pose any

⁶¹Cavanough, "Trading Freedom," 69.

⁶²Ibid.

immediate stability threat in the Americas, its contributing nature as a regional destabilizing effect must be taken seriously.

In terms of the overall security threats to the US stemming from transnational pollution, this depends upon how broadly national security policy is willing to extend to accept a limited area and limited number of people. As untreated waste from border rivers threatens US citizens and toxic fumes from copper smelters in Cananea and Nacozari Mexico continue to ride the wind into parts of California, Texas, and Arizona, the immediacy there seems apparent. From a nation-wide perspective, however, the threat is still limited. The bottom line remains that immediacy for a definable population of US citizens is reasonably apparent.

2. Water Quality and Scarcity

Exacerbated by pollution, fresh water represents a clear US national security concern. Although recent floods seem to question the issue of water scarcity, it is important to note that "If All earth's Water fit in a gallon jug, available fresh water would equal just over a tablespoon— less than half of one percent of the total."⁶³ Although aggregate water figures seem to imply that fresh water is abundant in North America, there are great differences between specific regions— especially in the American West and parts of Mexico. And, by the year 2000 some feel that water will outstrip oil as the world's most precious commodity. In international relations, the talk of the era of "water geopolitics" has begun.

The strategic importance of water supplies and their national security implications in North America is not a new concept. For instance, Peter H. Gleick notes that in the 1940's when the US and Mexico were negotiating a treaty on water rights surrounding the Colorado River, both sides expressed great concern over the security implications of the resource. At that time Mexican officials described access to the river as "a national interest superior to any other, and

⁶³Michael Parfit, "Sharing the Wealth of Water," 24.

Californians serving on the treaty committee warned that the treaty would 'strike a deadly blow at the country's *national security* by taking water away from southern California's coastal plain.'⁶⁴(emphasis in original) Since the US is obliged under treaty to supply a quantity of the Colorado River's water to Mexico, any reduction or degradation of the river's flow due to climactic changes or increased pollution could have immediate national security ramifications.⁶⁵ Although currently many see boundary water management between the US and Mexico as a successful case in conflict resolution, increasing demands on that water would certainly exacerbate tensions.⁶⁶ For the mean time, however, immediacy of the threat is contingent upon other factors such as climactic changes or increased water degradation before it becomes a problem.

In terms of other regional stability aspects of fresh water, however, the security implications are much more dire. In fact, Thomas Homer-Dixon feels that it is even possible to pinpoint certain regions where water crises are a virtual certainty by the year 2025. Although particular concern is given to the scarce water supplies in the Middle East and in certain parts of Africa, where populations are growing rapidly and where water has long been a source of argument between certain groups and societies, this does not deny the potential destabilizing effect of water scarcities in the Western Hemisphere.⁶⁷

In addition to supply, water quality is also an important question. According to the Interparliamentary Conference on the Global Environment from 1990, in Latin America and the Caribbean over 59 million urban residents are

⁶⁴Peter H. Gleick, "The Effects of Future Climatic Changes on International Water Resources: The Colorado River, the United States, and Mexico," *Policy Sciences*, vol. 21 (1988), 23-39.

⁶⁵Romm, *Once and Future Superpower*, 96.

⁶⁶Bruce Michael Bagley and Sergio Quezada ed., *Mexico: In Search Of Security*, (New Brunswick: Transaction Publishers, 1993), 217.

⁶⁷Homer-Dixon, "Environmental Scarcity and Global Security," 27.

currently without access to acceptable sanitation services.⁶⁸ This has the effect of creating fertile conditions for the breeding of water-borne parasitic organisms which prey upon the urban populace and which can easily spread or be carried northward into the US. As dams, deforestation, global climactic changes and pollution continue to threaten both the quality and supply of fresh water in the Americas, the future destabilizing effects of the loss of abundant and clean fresh water should not be understated.

3. Ocean Degradation

Covering over seventy percent of our planet, the oceans are a complex and highly vulnerable resource. In fact, ocean resource concerns have existed since the 1890's when "a new and melancholy discipline, fishery science" began to reach some sobering conclusions about certain commercial stocks of fish in the North Sea.⁶⁹ Despite recognition of fishery decline over a hundred years ago, the ever increasing demands put on fisheries everywhere have reduced many of the most important ones well below sustainable levels. The fishery example shows how mere recognition of a threat, even if quite early, is inadequate unless the recognition corresponds with fundamentally altered attitudes and policies surrounding the degradation. Also, as the fishery example suggests, unless a firm commitment to stopping the degradation occurs before "sustainable levels" are protected then permanent damage with unknown future consequences can occur.

Currently, the UN Food and Agriculture Agency (FAO) places the annual sustainable yield of the world's ocean and freshwater fisheries at 100 million metric tons. Although the 100 million ton threshold figure is only an estimate,

⁶⁸The Interparliamentary Conference on the Global Environment: Final Proceedings, (Washington D.C.: U.S. Government Printing Office, 1990).

⁶⁹Douglas M. Johnston, "Vulnerable Coastal and Marine Areas: A Framework for the Planning of Environmental Security Zones in the Ocean," *Ocean Development and International Law*, Vol. 24, 63.

this figure combined with other evidence eludes to the fact that fish stocks are on the verge of collapsing. "Between 1950 and 1988, the quantity of fish brought ashore increased fivefold, from 20 million to 98 million tons."⁷⁰ In 1987, the FAO commented:

The time of spectacular and sustained increases in fisheries catches is over. . . Almost all important stocks. . . are either fully exploited or overfished. Many of the stocks of more highly values species are depleted. Reef stocks and those of estarine/littoral zones are under special threat from illegal fishing and environmental pollution.⁷¹

By the year 2000, world demand for fish is predicted to rise to 120 million tons with annual requirements reaching 160 million tons by 2025. Although some of this demand could be met by expanding use of aquaculture, as the thresholds or levels of sustainability are passed, especially in poor countries in Central America and the Caribbean, peasant and small-scale fishermen will be hurt as a key source of protein and currency becomes scarce.⁷² The case for regional instability being aggravated by fishery depletion in these countries is high.

Additionally, in the Bearing Sea and adjacent North Pacific fisheries, US and Russian enforcement of their 200-mile exclusive economic zone (EEZ) has driven several international fleets onto the high seas straddling the EEZ's and forced them into using very long, and arbitrarily destructive, driftnets and longlines.⁷³ As a result, areas of the high seas just outside US, Canadian and Russian jurisdiction continue to be fished toward depletion and there are continual

⁷⁰Homer-Dixon, *Environmental Scarcity*, 27.

⁷¹Ibid., 29.

⁷²Ibid., 29

⁷³ Due to the increasing pressure, many Asian fleets have begun using long driftnets and longlines using thousands of baited hooks. These are implicated in the "incidental" losses of nontargeted fish species, seabirds, and protected marine turtles and mammals. James M. Broadus and Raphael V. Vartanov, "The Oceans and Environmental Security," *Oceanus*, Summer 1991, 16.

debates over illegal taking of Russian, Canadian and American salmon by all sides. As domestic pressure to protect the dwindling American fisheries continues, a willingness to extend the EEZ and more aggressively protect these fisheries may arise naturally or be forced by other nations.

Although the fishing issue is a poignant security issue, we must not forget that the oceans are crucial to this planet's life support system and a vast variety of life live in or depend on the oceans for food, trade, recreation and commerce. Though it is the huge seaborne accidents that focus world attention, the coastal seas around the US have for decades served as a convenient place for waste disposal. The effects in terms of restricted fishing and shellfishing as well as disruption of food chains and disrupted recreation can all be construed as national security threats.

B. TRANSNATIONAL ENVIRONMENTAL OR RESOURCE PROBLEMS THAT THREATEN US SECURITY IN A BROAD SENSE

In addition to regional threats with fairly distinct security ramifications, there exist other environmental issues which pose widespread risks to larger US populations but with more diluted, incremental or more difficult to identify immediacy. Though some specific issues in this category, like acid rain, are omitted because primary responsibility rests within the US itself, there are several other "broad" transnational environmental threats that demand national security consideration.

1. Global Warming / Atmospheric and Climatic Modifications

The issue of global climate change and atmospheric modification has received a huge amount of attention in recent years. Its growing importance was especially highlighted in the 1980's by the discovery of a hole over Antarctica in the ozone layer, which protects the earth from the sun's ultraviolet rays, in 1985.

Also, the seven hottest years of the century all occurred in that one decade.⁷⁴ Since then, national and international scientific communities have reached broad consensus on global warming and atmospheric degradation and have forwarded many dire predictions. This culminated in a UN Intergovernmental Panel on Climate Change (IPCC) statement which offered:

We are certain of the following: . . . emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases: carbon dioxide, methane, chlorofluorocarbons (CFC's) and nitrous oxide. These increases will enhance the greenhouse effect, resulting on average in additional warming of the Earth's surface.⁷⁵

Though the actual consequence of global warming cannot be known for certain, since there is no historical basis for determining the outcome, the physics of greenhouse effects are certain. It is the naturally occurring greenhouse gases such as water vapor and carbon dioxide which keep earth approximately 30 degree C warmer than it would be without their presence. And observations of the atmospheres and temperatures on other planets confirm the theory.⁷⁶ Though because of the uncertainties of the roles played by many components of the climate system, we do not know the exact rate at which climate changes from an enhanced greenhouse effect will occur.⁷⁷ Best predictions of the impacts to be expected from global warming tell us that, in addition to warmer global-averaged temperature, many physical and biological systems will be effected. This could include increased evaporation from the oceans and increased precipitation— although the timing and distribution of rainfall is apt to be quite different than currently seen. Also, due to thermal expansion of ocean water as it warms and melting glacial ice,

⁷⁴Romm, *Defining National Security*, 16.

⁷⁵*Ibid.*, 17.

⁷⁶Interparliamentary Conference Proceedings, 87.

⁷⁷*Ibid.*

global warming is likely to increase world sea levels by approximately one foot.⁷⁸ Since one third of the world's people live within 40 miles of the sea, "where the soil is the richest and the land the lowest," as sea levels rise the implications could be enormous.⁷⁹ Flooding forcing environmental refugees, saltwater intrusion on freshwater supplies, degradation of agriculture, forests, grassland and disruption of marine and coastal environments may all occur so rapidly that it may preclude our abilities to adapt fast enough to stop widespread suffering.

In a worst-case scenario, the earth's temperature would increase by 5 degrees over the next 100 years.⁸⁰ This would invariably cause a drastic shock to the ecosystem: perhaps causing significant melting of the Antarctic Ice sheet; radically changed major ocean currents leading to altered weather patterns; or a runaway greenhouse effect if initial warming melts the high-latitude tundra causing a sudden release of methane gas.⁸¹ If realized, the security ramifications of this kind of ecological catastrophe would be huge. Widespread drought, desertification, starvation, flooding and environmental refugees could overwhelm our capacity to deal with these problems. The economic costs as well as quality of life effects are, however, impossible to envision with any reasonable accuracy.

In addition to global warming, recent research suggests that a 1 percent

⁷⁸A one foot rise is in the middle of the expected range although projections about how much, and how rapidly it will occur are still very speculative.

⁷⁹Romm, *Defining National Security*, 24.

⁸⁰Over the last few years a number of experts have reached a rough consensus on global warming. Assuming no major changes in the trend of human emission of greenhouse gases, the earth will warm an average of nearly 2 degrees Fahrenheit by 2025 and 5 degrees by 2100. Though this might not seem like much, the earth has warmed only approximately 9 degrees since the coldest period of the last ice age. Moreover, the predicted rate of increase during the next 100 years will be over .5 degrees per decade, which is far faster than any climate change in recorded history. Thomas F. Homer-Dixon, "Environmental Scarcity," 20-21.

⁸¹Romm, *Defining National Security*, 19.

decrease in stratospheric ozone produces about a 2 percent increase in the incidence of cancer-causing ultraviolet radiation on the surface of the earth. This, in turn produces about a 3 percent increase in nonmelanoma skin-cancer rates.⁸² Though this immediate threat clearly impacts quality of life for Americans, the harmful effects of increased ultraviolet radiation on crops, forest, ocean phytoplankton (which form the basis of the ocean food chain) and the health of livestock may have even greater security implications.⁸³ The extent to which, however, is impossible to predict. Perhaps with the only exception of promoting democracy, all seven national security criteria are impacted by this kind of environmental degradation. What is happening to the atmosphere today is no accident. We know that the ramifications of atmospheric degradation could be huge, and yet, for reasons previously discussed, a comprehensive national security mandate for atmospheric degradation has not yet been formulated.

2. Loss of Genetic Biodiversity

Another widely-quoted environmental issue concerns the threats associated with the loss of the diverse range of plant and animal species on the planet. The concept of biodiversity encompasses virtually all life on the earth. And, altering the make-up of any level in this interconnected chain could have dramatic effects on other biological links including humans. Although we are dependent upon biological diversity for our basic survival, the concept of "biodependence" is far from a guiding principle in the modern world and the importance of genetic biodiversity is usually discussed from a strictly utilitarian standpoint.⁸⁴

Though global in scope, in the Western Hemisphere this biodiversity threat has been most associated with tropical rain forests where it is generally

⁸²Homer-Dixon, "Environmental Scarcity and Global Security," 22.

⁸³Ibid., 23.

⁸⁴Interparliamentary Conference, Final Proceedings, 103.

acknowledged the majority of plant and animal species, and more importantly their genetic information, reside. Although this genetic information is a priceless resource, objectively qualifying its US national security threat level is very difficult. When we consider that scientists conservatively estimate that between 4,000 and 6,000 species a year are lost due to tropical-forest degradation, a rate 10,000 times greater than the natural rate of extinction prior to the appearance of man, then the sheer scope of the loss seems to immediately imply a security threat.⁸⁵ As alarming as the numbers of species lost are, however, in terms of the US security criteria the impact is difficult to trace. Though regional stability is threatened as the economic viability of certain regions is reduced along with their biodiversity, most of the species reduction is related to loss of habitat associated with development practices. Though the potential for huge economic gains in medicines and other specialized plant products is great for the regions which contain this tremendous biological diversity, and goes mostly unrealized, generally these rainforests are currently exploited only for their more limited value as timber, farmland or grazing lands. In other words, the net economic advantage in those countries which can be tied to the US economy is negligible.⁸⁶ Although the national security implication in those countries which contain the diversity is clear, along the lines of their own economic revitalization, in terms of the US threat the risk is low. The simple fact remains that although genetic biodiversity is a fundamental part of our existence, we have learned to thrive while only using a fraction of the biological potential on the planet. Of the at least 75,000 edible

⁸⁵If one adds the effects of climate change, an estimated 25 percent loss of planetary biodiversity lost in the next 100 years is quite realistic. Paul R. Ehrlich and Edward O. Wilson, "Biodiversity Studies: Science and Policy," *Science*, 16 August, 1991, 760. and Mathews, "Redefining Security," 165.

⁸⁶As one 1989 study explained: "A country could exhaust its mineral resources, cut down its forests, erode its soils, pollute its aquifers, and hunt its wildlife and fisheries to extinction, but measured income would not be affected as these assets disappeared." Robert Repetto et al., *Wasting Assets*, (Washington D.C.: World Resources Institute, June 1989), 2.

plant species that exist in the world, humans rely heavily on a mere 20 species, including wheat, rye millet, and rice.⁸⁷ As long as crop genetic diversity is maintained then large-scale threats to food supplies will be low.

Though mass extinctions are deplorable for their senseless waste of huge potential to help mankind, they do not immediately threaten the US to the degree that demands their inclusion as a national security priority. Only when biodiversity lost threatens crucial food chain links in what we depend on in the US will a national security level priority be reached. Again, however, since we do not know all the crucial linkages between levels of biodiversity in other parts of the world and our own environmental systems, the national security implications of biodiversity lost is impossible to determine. Species diversity and larger ecosystems are integrated networks and the parts need to be conserved to conserve the whole. The quandary over the demand to demonstrate immediacy versus the unknown status of this threat looms large. Biodiversity lost is a huge global problem. It needs to be dealt with as a high priority in both the remaining rainforests as well as oceans where food chains are not well understood. Its US national security implications are, however, currently obscured by a lack of clear causal ties to our own economic or social well-being.

3. Deforestation, Soil Erosion and Desertification

Most estimates of forest degradation vary widely since there are many different kinds and degrees of damage. Also, in some cases forests can recover through replanting and natural regeneration, which tends to obscure category boundaries. Furthermore, satellite imagery to detect the extent of deforestation is far less useful than commonly thought and images normally must be supported by further detailed ground inspections.

Despite these problems in chronicalling the extent of the damage, it is clear

⁸⁷Romm, *Once and Future Superpower*, 163.

by the current evidence that forest depletion continues at an alarming rate.⁸⁸ In terms of security threats, deforestation aggravates global warming by destroying plants that otherwise would have removed carbon dioxide from the atmosphere. Additionally, when forests are burned or clearcut and allowed to decay, carbon dioxide is released into the atmosphere.⁸⁹ Especially in the tropics, where the greatest amount of deforestation is taking place, fragile ecosystems are beginning to unravel. In these delicate tropical soils, the removal of forest cover interrupts crucial nutrient cycling above and below the soil. Leaching of the poor soils strips its fertility and plant and animal species lose their habitats. Without the cover provided by the trees, the remaining soils are often washed in to rivers causing siltation and flooding. As a result, expensive irrigation and hydro-electric systems are often rendered useless. According to Jessica Tuchman Mathews of the World Resources Institute, "Traced through its effects on agriculture, energy supply and water resources, tropical deforestation impoverishes about a billion people. This pattern is endemic throughout Central America, much of Asia, sub-Saharan Africa and South America."⁹⁰

Exacerbated by deforestation, soil degradation is another major cause for concern. Both as source of decline in itself and its effects on other types of environmental degradation, soil erosion or damage is causing reduced agricultural productivity on nearly 15 percent of the earth's land area.⁹¹ Since nearly all the world's best farmland is already under cultivation, what is left is either less fertile, not sufficiently rain fed, infested with pests, harder to plant and, most importantly, more susceptible to damage from misuse. The combination of

⁸⁸Each year area the size of Austria is deforested, Romm, *Defining National Security*, 20.

⁸⁹Ibid.

⁹⁰Mathews, "Redefining Security," 165.

⁹¹Ibid.

deforestation, overcultivation, overgrazing, erosion, compacting, and salinization of agricultural lands contribute to desertification which includes wind erosion and changes in soil moisture due to climactic changes. Irreversible desertification annually claims an estimated 6 million hectares worldwide, and an additional 21 million hectares annually becomes so impoverished as to be unprofitable to farm or graze.⁹² All told, the planet will lose about 100 million hectares of arable land between 1985 and 2000.⁹³ Such huge losses in land will mean reduced economic potential and will demand restructured land tenure in many nations. Dwindling amounts of cultivatable land demanding land reform, however, is among the most difficult of all political tasks and often leads directly to conflict.

4. Population Growth

One of the underlying causes of all the preceding environmental problems, population size is a key variable driving environmental degradation. Though not a direct cause of environmental degradation itself, population growth exacerbates patterns of consumption which lead to degradation. It can be said that "population growth lies at the core of most environmental trends."⁹⁴

Although estimates vary dramatically, world population is expected to grow to 6.2 billion people by the year 2000 and perhaps 8.5 billion in the year 2025. Population growth means more land is cleared for housing and agriculture, and more energy is needed. Although population based environmental damage is often difficult to recognize because it tends to manifest itself locally, the daily quest for food, fodder, fuelwood and water, especially in poor rural areas, can bring with it destruction on local ecosystems very rapidly and perhaps irreversibly. Thereby contributing to deforestation, global warming and other kinds of environmental

⁹²Interparliamentary Conference, Final Proceedings, 97.

⁹³Homer-Dixon, "Environmental Scarcity and Global Security," 25.

⁹⁴Mathews, "Redefining Security," 163.

degradation. Though much of the world's population growth rates have declined in many nations during the last twenty years, in some of the world's most crowded countries this rate is not declining. Especially in equatorial regions where environmental consequences are the greatest, the developing world will see the majority of the earth's population increase.

In Mexico, shifts in agricultural production and population growth led to the country reverting to net importation of food in 1986.⁹⁵ By the year 2000 their population will have reached 110 million and by 2025, 150 million. Although simple Malthusian explanations of population growth and environmental decline have been heavily criticized, several Mexican scholars have begun to include population growth as one of Mexico's major problems.⁹⁶ With current population growth rates between two and four percent, the demands of local population on resources doubles every twenty years. Without appreciable increases in standard of living and a re-directed economy away from an agrarian or extractive basis, these resource pressures increase competition for land, water, and will continue to exacerbate poverty and social unrest.⁹⁷

C. SOCIAL EFFECTS OF ENVIRONMENTAL DEGRADATION

In addition to the explicit causes of environmental degradation, there are resultant social effects which also pose environmental security risks. Although the relationship between causes of environmental degradation and environmental security may, at first glance, seem much more urgent than the social effects, several effects are themselves major causes of environmental concern. Though root causes need to be addressed, by understanding the social effects we can better understand what causes cycles of degradation and, hence, how to stop it. This

⁹⁵Romm, *Defining National Security*, 24.

⁹⁶Liverman, "Environment and Security in Mexico," in Bagley, *Mexico: In Search of Security*, 227.

⁹⁷*Ibid.*, 228.

thesis argues that the social effects of environmental degradation are also intrinsically and inevitably linked to questions of US environmental security.

1. Environmental Refugees

It is sometimes claimed that environmental degradation can be an element in the production of vast numbers of environmental refugees and that those refugees pose a potential US national security risk. The fears most commonly cited are the vast exodus following a sea level rise due to global warming driving people back from coastal areas. Also, the Haitian example of an environmentally destroyed land becoming unable to sustain its people, in both a qualitative and quantitative way, is also often used with dire predictions for the same trends being repeated in Mexico and the rest of the Caribbean. The term "environmental refugee" can be misleading, however, since it implies that environmental degradation is the direct and sole cause of the refugee flows.⁹⁸ Usually, however, environmental degradation is only one of a multitude of "interacting physical and social factors that may together force people from their homelands."⁹⁹ In this light we must be careful how we categorize migrants who are motivated primarily by other factors other than environmental degradation from those environmental refugees motivated solely by it. Though lines between the groups are blurry, the distinction is a valid one for national security consideration. Since strictly environmental reasons cannot be attributed to most refugees currently trying to enter the US illegally, we cannot consider them pure environmental refugees. This is not to say, however, that environmental factors are not important— they are. However, currently political motivations and a quest for a higher standard of living are the primary motivating factors.

In Mexico, environmental degradation is playing a greater role in that

⁹⁸Homer Dixon, "On the Threshold." 40.

⁹⁹Ibid.

countries economic problems which is a contributing factor in illegal immigration. If one takes a liberal interpretation of the term, hundreds of environmental refugees enter the US every day. Pure environmental refugees, however, are surly a thing of the future if environmental degradation continues its course in much of Latin America.

2. Agricultural and Economic Decline

As we can see in the previous issues, an important effect of environmental degradation is the agricultural and economic decline it can cause. Although, climactic changes and other cases of environmental degradation can have tremendous repercussions for agricultural productivity in the US, because of its economic diversity dramatic effects in the short term of environmental degradation directly on the US economy are probably limited. Especially hard hit, however, are already poor economies which are undiversified and hence unable to recover from environmental degradation of this sort. Particularly in the developing countries in the Western Hemisphere, wealth is often directly affected by lower food output and population movements caused by environmental degradation.¹⁰⁰

Although measuring the actual amount of economic decline due to environmental degradation on agriculture is not easy because current state GNP seldom counts many of the resources being degraded, the long-term effects on state's economies are tremendous.¹⁰¹ For instance, since agriculture is the source of a large share of the wealth generated by many poor societies in our hemisphere, soil degradation or climactic changes affecting soil moisture could have a devastating effect on these nations. Though short-term economic gains can be

¹⁰⁰Homer-Dixon, "Environmental Scarcity and Global Security," 37.

¹⁰¹Robert Repetto of the World Resources Institute notes: "A nation could exhaust its mineral reserves, cut down its forests, erode its soils, pollute its aquifers and hunt its wildlife to extinction— all without affecting measured income."

achieved from logging the forests in Central and South America, the increased runoff can destroy roads bridges and other valuable infrastructure. Siltation may destroy rivers and important spawning grounds as well as the capacity of hydroelectric or other use. As wood becomes scarcer and more expensive, it takes more of the household budget for poor families to provide fuel for cooking.

In addition to the impaired ability of these nations to improve their economic condition for trade purposes with the US, the potential for regional conflict brought about by economic decline is great. Economic decline corrodes confidence in national purpose and undermines financial, legal and political institutions.¹⁰² Environmental degradation of this sort raises the financial and political demands on governments. For example, it often requires that huge sums be spent on dams and irrigation systems to compensate for water scarcity or reforestation programs to compensate for soil lost to deforestation.¹⁰³ The loss of sustainable resources, from fish and fertile land to forests, can reduce tax revenues to local and national governments and further reduce the capacity of the governments to address environmental problems.

Particularly in the developing countries of the Western Hemisphere, agriculture is still the key to their economic security. Widespread soil erosion, water scarcity, loss of biodiversity, pollution and unequal distribution of productive resources diminish the sustainability of rural and urban life. Greenhouse warming and climate change may also affect agricultural production as rainfall patterns and soil moisture levels are changed. While it is true that climactic alterations may actually benefit some agricultural regions, others will suffer—especially in poor nations where change may occur too fast to allow for timely adaptation. Of particular security implication to the US, Mexico is extremely vulnerable to changes effecting agricultural production. For example,

¹⁰²Ibid., 42.

¹⁰³Homer-Dixon, "Environmental Scarcity and Global Security," 36.

recently large numbers of people have been leaving the state of Oaxaca because of drought and soil erosion.¹⁰⁴ In the future, global warming could produce a decrease of 40 percent in Mexican rain-fed agriculture, which, in combination with subsequent losses in free trade could bring great suffering and national conflict.¹⁰⁵

D. ASSESSING ENVIRONMENTAL DEGRADATION AS NATIONAL SECURITY CONCERNS

Although the number and range of issues surrounding the impact of environmental degradation on humanity is immense, that certain issues can pose legitimate national security threats should be clear. However, cases of environmental degradation which should be considered national security threats exist, and coexist with many other issues which do not need to be framed in such a manner. Some are not yet threats but could easily become threatening in the future on their own while others depend upon yet unknown factors to become threats. It is important to realize that although vaguely understood and controversial, by properly defining environmental issues and weighing them against clear criteria an assessment of which threats represent national security concerns today can be established. Though we cannot hope to solve all of them, what are the most important can be addressed and, in doing so, we are both mitigating carry-over effects to other threats and learning about environmental interactions. Though by no means a comprehensive review of environmental degradation, what the preceding chapters have tried to provide is a process by which environmental threats can be identified, better understood, and some of the difficulties involved with environmental security explained. Not necessarily a prescription for environmental security but, rather, this study is a demonstration of the procedures which must be applied to establish an environmental security

¹⁰⁴Ibid., 37.

¹⁰⁵One of Mexico's principle trade advantages is water-intensive fruits and vegetables.

strategy. Although such a cursory look can at best provide only a basic qualitative analysis, some general conclusions can be made.

For instance, pollution is an example of environmental degradation posing an immediate threat to the quality of life of a significant portion of the US population. And, national security significance can be easily demonstrated along the border with Mexico. Governmental choice there is limited because of the causes and nature of transnational pollution and, although a military role could have a nominal impact, diplomatic effort and economic pressure is our best hope to alleviate the degradation. In the case of limited fresh water, immediacy is not as critical since adequate supplies are currently available and generally controlled by the US. Should these tenuous supplies dwindle, however, the national security implications would be immediate; both from a quality of life and economic perspective in the Western states and in a threat from Mexico which depends heavily upon US-fed water. Effort, therefore, needs to focus on preventing water supply degradation. Our national security focus here lies in resource planning, stockpiling and efforts to deny any large-scale climactic alterations.

Besides its still largely unknown impact on global climactic and other crucial environmental linkages, ocean degradation poses an immediate national security threat especially in the form of valuable fisheries; their economic impact and the threats associated with multiple states claiming the rights to ocean resources. If current trends continue, this is also one of the few threats where a clear military role is apparent. In addition to economic and political pressure, naval monitoring and data collection within the coastal fisheries is an appropriate response. Again, however, the economic importance and highly political nature of this issue demands more than a purely military response.

Although the immediacy of atmospheric and climactic changes is widely questioned, its potential ramifications are so great that preemptive measures are simply demanded. Here we must not wait until the security implications are readily apparent or the damage will be too severe to easily counteract. Although much effort has been undertaken to address atmospheric and climactic changes

already, a national security framework is necessary in order to muster enough resources to remove this threat. Here again, education, political maneuvering, economic pressure, and military assistance are all appropriate and needed.

Unlike the previous cases, transnational deforestation broadly affects other environmental concerns but, because of its small economic component, currently has only a small direct effect on US security. And, since the US itself cut down nearly all of its forest cover in its history, efforts to halt other world-wide deforestation lack a demonstration effect from the developed world and political effort smacks of hypocrisy. Intricately linked with deforestation in the Western Hemisphere, biodiversity lost in and of itself lacks the demonstratable tie to US national security. Of course, the risks of these issues are still largely unknown and we cannot wait until they reveal themselves or it will be too late to reverse the trend. Also, ramifications of deforestation do constitute threats if significant agricultural and economic decline resulting from the deforestation—a particular risk in tropical soils. Preventing that agricultural and economic decline is where we must focus our national security strategy. With a current minimal direct security tie, emphasis needs to focus on education and sound economic practices to limit the extent of deforestation abroad and emphasizing sustainable use of the forests. As the case study from Brazil in the next chapter will demonstrate, however, influencing state's behavior to protect their environment can prove very tricky.

The population issue is perhaps the most difficult of all to influence. Since it exacerbates all forms of environmental degradation it is, therefore, a national security threat. Again, however, education and economic incentives or pressure are the only appropriate means for the US to influence external population growth. It again comes down to politics and economics. Closely tied to overpopulation, environmental refugees only pose a threat to the US if their numbers increase significantly. A preemptive strategy, therefore, is needed. A comprehensive refugee strategy must, therefore, cut across many environmental issues but again settles on economic advancement in developing nations and

political efforts for those nations to limit emigration. Education and agricultural assistance should therefore become national security tactics as well as other efforts aimed at improving the economic status of the emigree nations. This along with developmental assistance and aid aimed at environmentally sound development.

Agricultural decline must be addressed since it risks both regional instability and, ultimately, US economic revitalization. Although the security implications for the US of inadequate growth in the developing world directly impact US economic revitalization, the ramifications of agricultural decline in the developing nations of the Western Hemisphere also extend beyond the loss of markets and investment. "When economic growth slows or stops, social strains emerge and political systems can become destabilized. Often the result is civil unrest and outright violence, either within a country or with its neighbors"¹⁰⁶ In the Western Hemisphere this process is of particular security interest due to both the dependence on agriculture and refugee potential that has only been hinted at with the Haitian and Chiapas examples. As former Secretary of State George Shultz stated in 1984: "In our world today, there can be no enduring economic prosperity for the United States without sustained economic growth in the Third World. Security and peace for Americans are contingent upon stability and peace in the developing world."¹⁰⁷

The United States, by making environmental security a priority, not only helps itself in terms of quality of life for border regions, continued debt servicing, and increased trade but, by helping developing nations to solve some of their environmental problems we may be contributing to regional stability as well. In

¹⁰⁶Myers, "Environment and Security," 24. Also, for an interesting evaluation of the plurality of social conditions that can cause peasant uprisings see chapter 6 of, Timothy P. Wickham-Crowley, *Guerrillas & Revolution in Latin America: A Comparative Study of Insurgents and Regimes Since 1956*, (Princeton: Princeton University Press, 1992).

¹⁰⁷Ibid.

doing so, the United States will not only protect itself and its markets but, will help forestall the spiral of environmental degradation from severed environmental linkages and climactic changes that threaten the planet as a whole.

It is apparent that achieving environmental security will require that other than military tactics assume paramount importance. Environmental degradation is felt aesthetically, scientifically but, above all, economically. Though military use, education and developmental assistance must coincide with political pressure, what is most apparent is that economic security is most threatened. By extension, assistance and pressure there will achieve the most widespread results. Also, though preventing deforestation and biodiversity lost ought not be national security priorities per se, since agricultural decline and pollution are inextricably linked to these issues they will become a part of the overall scheme. It is in preventing agricultural decline, pollution, atmospheric degradation and fishery depletion where we must focus national security efforts. By setting priorities such as these, national security interests are best served. Such prioritizing allows for the most cost-effective tactics to be formulated and applied. Additionally, having such a framework allows for prioritizing as new environmental issues emerge or standing issues worsen.

Although environmental degradation poses many global, transnational security threats, it is also apparent that of primary consideration to the United States lies in our own hemisphere and especially along our southern border with Mexico. It is here that issues of pollution, fresh water scarcities, agricultural decline, deforestation, biodiversity, and potential for environmental refugees are most acute. Though environmental lessons can be carried over to many other nations and regions outside of the hemisphere, the most effective and lasting contributions toward achieving US environmental security should be felt by concentrating here. And since the national security goal of economic revitalization is the primary target, where environmental degradation impacts the economy most should be our primary focus. Here again, our own hemisphere is our largest trading partner. It is to achieving environmental security that we now shift our focus.

IV. ACHIEVING ENVIRONMENTAL SECURITY

Environmental security is clearly an issue whose solution will require a wide host of techniques and approaches to achieve. Tactics will include treaties aimed at mitigating many types of environmental destruction, a restructuring of the US foreign aid program aimed at slowing environmental degradation while promoting sustainable development (and away from purely military assistance), and in environmentally sound technology transfer to provide the impetus for economic development but, with lower environmental impacts than could be attained otherwise. Additional pressure needs to be applied on international aid institutions such as the World Bank in giving special consideration to the financing of sustainable, environmentally sound development schemes. Also, "debt-for-nature swaps" where foreign debt is forgiven in return for environmental preservation have shown themselves to be appropriate conservation techniques. Achieving environmental security requires that a multitude of tools and tactics be employed that one does not normally think of when considering national security.

This is not to say, however, that the military will not play a large role in achieving environmental security. Currently a Defence Department environmental security program is working to respond to the difficult challenges wrought by environmental degradation and the environmental consequences of a new world order. Though currently focusing on domestic environmental issues associated with the military and defense buildup in the past, subsequent downsizing, and in managing its existing assets in an environmentally sound manner, the national security implications of environmental degradation now have a strong platform from which to be examined.¹⁰⁸ As of May 1993, the position of Deputy Under Secretary of Defense for Environmental Security was created to oversee this effort. There is no reason to think that the enormous assets available from the Department of Defense could not be used to help achieve environmental security.

¹⁰⁸Sherri Wasserman Goodman, "Vision for Environmental Security," *Defense* 94, Issue 3, 25-39.

This could include, but is not limited to, intelligence and logistic equipment and the skills necessary to address such things as poaching as well as global monitoring and treaty enforcement. The use of naval monitoring and sample gathering is especially useful because of their "long geographic reach and flexible uses to which ships can be put."¹⁰⁹ In addition, the US Army Corps of Engineer's construction and infrastructure building capacity may well be some of the most cost-effective means to help achieve environmental security. Of course, identifying the threats and potential tools to address those threats is only the beginning step in achieving environmental security. Applying these tools brings up a host of new problems.

The first two chapters of this study identified environmental national security threats as transnational environmental degradation primarily stemming from the developing nations of Latin America. Also, revitalizing the US economy was identified as the principle national security goal to be achieved along with quality of life especially in border regions. In addition to the limited military roles already discussed, in this chapter we will examine two of the most important nonmilitary means of achieving environmental security. By examining case studies of Brazil and Mexico, the impact of environmental politics and environmental economics can be examined in practice. In order to allow any of the tools spoken about above to be applied, the recipient nations must welcome the advance. For this to be achieved efficient politics and economics play a large and pivotal role.

The next section explores the politics of environmental protection as it has typically been played with respect to Latin America. Housing the greatest environmental wealth and potential destruction in the hemisphere, Brazil is also the largest and most important economy in Latin America. It is still a developing

¹⁰⁹In fact, in coming years fishery protection should become a boom industry. P. McLaren, "Navies & The Global Environment," *Navy International*, January/February, 1993. 12.

nation, however, and plagued by environmental problems but intensively nationalistic and proud of its environmental standing. International environmental politics examined with regards to Brazil should give us a basic understanding of how environmental politics have been used in the past which will also help us understand how it needs to be used for the rest of the hemisphere in the future.

A. ENVIRONMENTAL POLITICS

As Steven Sanderson points out, even a partial list of those involved in trying to effect environmental protection is quite impressive:

The World Bank puts environmental limits on the economic development projects it supports, trying to strike a balance between environment and development. The U.N. Conference on Trade and Development has developed an International Timber Agreement, a 44-nation International Tropical Timber Organization (ITTO), and a putative commitment to sustainable forest use. The European Parliament has declared its intention to tax timber exports from tropical countries that do not exploit their forest resources in 'sustainable ways.' The heads of the United Nations, the IMF, and the World Bank have met with the World Commission on national actors concerned with the environment and Development in Norway in the first summit of transnational actors concerned with the environment. To great fanfare, the Paris Economic Summit of 1989 was declared 'Green.' The 1972 Stockholm conference was commemorated with the 1992 global conference on environment and development in Brazil.¹¹⁰

Evident in all these admirable attempts, however, is the troubling fact that "policymakers proceed with programs in the absence of convincing evidence that what they are proposing either makes sense or makes a difference, or, in fact, is based on a convincing set of assumptions about human behavior."¹¹¹ For example, both the World Bank and the rest of the OECD community encourage increased trade to foster development, relieve poverty and solve their debt. Many experts,

¹¹⁰ Steven E. Sanderson, *The Politics of Trade in Latin American Development* (Stanford: Stanford University Press, 1992), 71.

¹¹¹ Ibid., 74.

however, argue that increased trade based on specialization is particularly damaging to the environment.¹¹² The anecdotal evidence seems endless as unintended consequences of the myriad of initiatives trying to effect environmental protection are revealed to have been useless, or worse, resulted in additional destruction.

Despite the confusing, controversial and divisive nature of environmental issues, the scope of their political power is growing. Though seriously lacking currently, an environmental political understanding with appropriate and definitive policy recommendations is a necessary precursor to achieving environmental security. Despite the inherent political character of the environmental issues, the absence of political analysis in conservation and development literature is striking. It seems that few groups focus on the intrinsically political nature of the issues or, bring the tools of political science to bear on the questions of the environment.¹¹³ This fact alone is largely why so many environmental proposals go unrealized and result in continued environmental degradation.

In the strictly political sense, which group or side of the debate is actually correct matters little if even experts cannot agree on many of the most important environmental issues. The study of environmental politics as a crucial conduit toward environmental protection yields, in addition to persuasive techniques, a way to gauge which view predominates or, at least, which opinion is more compelling at a particular time. Though this seems an inefficient and tedious way to achieve and monitor environmental protection --through politics-- as we have seen it is still the only way to achieve a national security orientation and thus appropriate action. Since environmental protection rarely occurs without governmental pressure, it must, therefore, undergo a political filter. The nature of

¹¹²Ibid., 71.

¹¹³Ibid., 87.

the issue demands such a process and yet, inexplicably, many environmental advocates still deny the political aspect of the environmental issues. The study of environmental politics not only contributes to a general understanding of a new component of interstate relations but, if applied correctly, can also help speed up the process of environmental reform as new important evidence emerges or, when environmental issues are finally fully admitted as legitimate and not anti-development or alarmist political issues. Until that happens one thing is clear, consensus or not, denying the political aspects of the environmental movement is to deny success in environmental protection.

Environmental politics concerns itself more with power and capacity for environmental protection rather than the right, wrong, or morality of the issue. In this sense it is amoral and non-scientific, just political, waiting in its own unique way for the certainty and strength of the debate to impel action. The lack of political concern and analysis on the environmental issue is blatant, this amid a huge amount of effort on the scientific aspects of the environmental issues. This is primarily due to the extremely divisive nature of the topic, the mixed agendas of the groups trying to implement change and, the general apolitical aspirations of many environment advocates. Since politics play an intricate and necessary role in the environmental protection issue, however, their inclusion in the environmental picture is essential.

Specifically, the potential consequences of environmental politics for Latin America are enormous. Since the linkages between trade, external stabilization, domestic structural adjustment and poverty alleviation have all been shown as culprits in one way or another to natural resource destruction and, all are important political issues in Latin America, the importance of environmental political analysis there is particularly relevant. Furthermore, recently The World Commission on Environment and Development (Brundtland Commission) revealed that, in their opinion, debt is the most critical international pressure point forcing overexploitation of natural resources in high debt countries and,

suggests debt reduction as the first priority of the international system.¹¹⁴ Since debt is one of the greatest political issues facing Latin America, it combines with the other factors to exacerbate the political environmental debate. Since Latin America also contains much of the last remaining, and most important, environmental reserves, it is no wonder that the environmental looking glass has squarely focused there. Such a unique combination of factors is also why Latin America is the perfect vantage point from which to examine environmental politics.

1. The Case of Brazil

Though environmental issues at first seem relatively new to the political discourse in Brazil, gaining considerable force only in the last 25 years, in reality natural resource issues have shaped Brazilian policy in large degree since colonial times. What is interesting and new, however, is that traditional environmental issues including mining, forestry and territory settlement have reinvented themselves and "reappeared on the center stage as *materia prima* for politicians and international economic experts seeking to reform Latin America."¹¹⁵ In a relatively brief span of time many of Brazil's previously accepted development practices became totally unacceptable to the developed world. Brazil's settlement of its vast interior and subsequent dislocation or destruction of the native peoples there, its exploitation of its natural resources and the resulting sacrifice of biological diversity (practices endemic to most developed nations in their own ascendance to prosperity), as if overnight became overriding domestic and international political issues. Indeed, the speed to which these internationally widespread development practices wrought condemnation upon Brazil by virtually every institution with a perceived mandate there was striking.

¹¹⁴Ibid., 72.

¹¹⁵Ibid., 70.

The forcefulness by which environmental pressure came to bear on Brazil underscores the importance of new-found environmental concerns but, also calls into question some of the evidence and motives behind the indictments and spurred a great deal of political maneuvering. Especially considering the fact that many foreign nations doing the finger-pointing had themselves used many of these same practices while developing and often continue to do so. This fact is particularly troublesome in Brazil since their lust for achieving first world status is great while, simultaneously, their concern and respect for their environment are inwardly perceived as quite high. When compared with the concern other nations showed for their environment when developing and, the level of pollution the developed world still creates, the Brazilians generally feel that they are doing a good or at least adequate job considering their situation. Brazilians frequently say that the industrialized nations do not have the moral authority to criticize Brazil for the claimed destruction of the Amazon since they have already destroyed most of their own forest cover. Though the governments of the industrialized nations reply that they have learned from past mistakes, and so have a lesson to teach Brazil, this line of reasoning falls on deaf ears in Brazil. Add to this situation a series of conflicting and often contradictory reports by scientists investigating the environmental condition of Brazil and, a military paranoia about its vast and mostly undefended border deep in the Amazon, then the scope and complexity of environmental politics in Brazil becomes evident. Simply, Brazil cannot fathom the international uproar about its environment, just as the developed world feels compelled to keep the issue at the fore. Meanwhile, despite the uproar, the environmental picture continues to worsen.

This is the troubling story of environmental politics in Brazil. As a nation they simply can't deny the power or resolve of the environmental front, as political issues of trade and debt reduction now come with environmental strings attached. Also, they can't seem to stop nor even condemn those forces that motivated the destruction in the first place. Furthermore, since international pressure has galvanized internal interest and concern for their environment, the indigenous

debate is now a permanent political element in Brazil. And yet, equally powerful internal forces always emerge to counter each domestic advance. As discussed previously, politics is power and environmental politics have grown hardy enough to influence where, just a few years prior, they were powerless. Influence yes, but environmental politics are still a far way away from changing the entire course of politics in Brazil.

Despite what inaccuracies the consensus opinion may hold, it is impossible to deny that the environmental concerns facing Brazil today are huge. Pollution, deforestation, watershed destruction, declining agricultural production and a lack of clean air and water are but a few of the many environmental problems they face. As the repository for fully one third of the world's remaining tropical rain forest, however, Brazil carries an additional burden of possessing an environmentally important region unsurpassed in the rest of the world. A treasure that Brazil increasingly sees as one that a developed world with a new found guilty environmental conscience looks upon with coveting eyes. It is primarily because of the Amazon that Brazil is on the front lines of the environmental political debate. For analysis, however, Brazil's environmental situation is the ideal place to discuss the newly emerging world of environmental politics; displaying both its confusing and often contradictory nature, divisive potential and worldwide importance of this new political phenomenon.

Brazil's domestic pride and desire to protect its environment is perhaps only overshadowed by its willingness to destroy its ecological purity in the name of development. In a similar paradox, many international institutions and governments claiming responsibility for environment, development, and economic stability in Brazil have emitted confusing and contradictory signals, often encouraging them to trade more to relieve poverty while at the same time protecting the environment —normally an unrealistic proposition.¹¹⁶ This is no better displayed than in the raging political debates facing Brazil's vast Amazon

¹¹⁶Ibid., 71.

wilderness.

a. *The Amazon*

It is indicative of the political nature of environmental issues today that the Amazon has received the lion's share of debate, and emerged as the leading case to which environmental political pressure has rallied. The Amazon focuses a clear protective mandate for a wide range of scientific as well as emotional reasons. For simplicity, however, that it is the world's greatest single source of bio-diversity, that it embodies worldwide fears about deforestation and climactic changes, and that it is still largely intact are the primary reasons sighted why the world needs to be concerned about its preservation. Although no one calls for wholesale destruction in the name of development, that is exactly what environmentalists fear continues to happen despite the widespread outrage, concern and the herculean efforts of scientists to document and mitigate the extent and nature of the damage there. The additional environmental aspects involving indigenous peoples rights, the greenhouse gases issue (CO² production due to burning the forest) and potential pharmaceutical and other potential locked in the forest only serve to fuel the fire of the already great international motivation to do something to protect the region. And yet, the destruction continues. Why, if common sense and science have convinced so many people that clear cutting the rain forest is wrong, stupid and contributes little or nothing to long term development, does it continue? The answer lies in the environmental politics of the Amazon. Deficient environmental politics and efficient development politics as well as long entrenched notions of nationalism, sovereignty and security reveal the answers to why so few can deny the efforts of so many to protect the forest. A survey of some of the most important environmental issues involving the Amazon will show their inherent political nature and, how that political character has been used, misused or forgotten as a policy tool.

Migration to the Amazon region began primarily in the 1950's with gaúchos who felt limited by their *minifundios* in Rio Grand do Sul and left to seek their fortunes in the forest. By the end of the 1970's, the debate over use of the

Amazon had already grown fierce. An aerial survey, carried out with the use of the Landsat satellite, by the Brazilian Forestry Institute (IBDF), and the National Space Research Institute (INPE), showed that, by the end of 1978, 7.7 million hectares of forest land had been cleared.¹¹⁷ Though this represents only 1.5 percent of the region, the evidence provides grist to the mill of both sides' arguments and shows how seemingly clear scientific evidence can first fuel, then lose a political debate. From the outset, the Landsat observations did not appear to support the scientists' claim that more of the original rain forest had been destroyed than was generally believed and thus, the pro-development observers claimed that the scientists had overstated the destruction. However, the satellite pictures gave a deceptive impression; "Areas of the forest which showed up quite clearly in the 1976 pictures as clearings reappeared as "virgin forest" in the 1978 pictures."¹¹⁸ It seems the clearings were soon covered over by a thin shrub-like vegetation, called *quicaça*, which shows up in the photographs as virgin forest. The land, though, had lost its protective cover of tropical forest and had already been exhausted. Ten years later, those in Brazil favoring the rapid economic exploitation of the Amazon still cited the old Landsat photographs to argue that deforestation was insignificant, and claimed that the ecologists greatly exaggerated the dangers. In the next ten years environmental pressure continued to mount, causing authorities in Brazil and neighboring countries, as well as concerned local and international experts, to begin a study aimed at establishing "minimal critical area(s)" of forest. Those in Brazil favoring rapid economic exploitation of the region, however, still successfully argued that deforestation was insignificant based on decade old evidence.¹¹⁹ Ironically, it was the scientists own survey, aimed at proving the extent of the damage, that was used effectively to

¹¹⁷ "Satellite stirs up Amazon Dispute," *Latin American Regional Reports Brazil* RB-80-03, 14 March 1980, 3.

¹¹⁸ RB-82-09, p.4.

¹¹⁹ RB-86-09, p.5.

combat the notion that the Amazon was swiftly being obliterated. It provided the pro-development coalition a 10+ year excuse to continue operations and, to a large degree, nullified many attempts to halt the dire consequences for the region which had been called for in the mainstream press and in books like; *The Amazon Jungle: from Green Hell to Red Desert?* by Robert Goodland and Howard Irwin.

Environmental consensus finally tasted victory, however, when in the summer of 1988, Brazil's constituent assembly finally voted, by 450 votes out of 559, amendments in the Constitution related to environmental protection.¹²⁰ The unveiling of the ecological package, *Nossa Natureza* (Our Nature), by President Sarney, followed mounting domestic and international pressure specifically against the annual burning of the forest for the clearing of land before cultivation. "At long last the environment has acquired a political dimension," commented federal deputy Fabio Feldmann, the "green" who spearheaded the battle in the constitutional assembly.¹²¹ Although this clearly reflected rising environmental awareness in Brazilian politics, powerful resistance was already "built in" as, according to a report published by the Washington-based World Resources Institute, the extensive deforestation could be traced directly to government financed programs and subsidies.¹²² That the new laws would often challenge local interests, and might either "languish or be difficult to enforce," is easily understood as official incentives are themselves blamed for the clearing of much of the forest land for cattle pasture, for the establishment of farms, and for the setting up of facilities for the industrialization of wood. Another political blow came when, as reported by the daily *Jornal do Brasil*, the country's leading land developer filed a complaint with the national defense council against a conspiracy aimed at the "internationalization" of the Amazonian region. So began the

¹²⁰ RB-88-06, p.3.

¹²¹ RB-88-10, p.3

¹²² RB-88-06, p.3.

onslaught of the powerful pro-development elite to frustrate the new amendments. Additionally, it was widely and critically disseminated that President Sarney had been "greatly influenced by international organizations," such as the World Bank, in taking measures which are "fatal for the development and integration of the Brazilian territory."¹²³ Environmental politics had pressured the environmental vote in the assembly but, the resident political culture, official incentives, and the political power of the influential land developers were sufficient to literally derail years of effort by environmentalists and, undermine much of the progress revealed by the vote.

The successful political maneuvering of President Sarney became evident, however, as the Inter-American Development Bank (IDB) announced that it had resumed disbursement on two loans, totaling \$580 million, that had been suspended the previous year under environmental pressure.¹²⁴ The release of the money was in response to "hopeful signs that the Brazilian government is responding positively to the international uproar over the destruction of the Amazonian rain forest."¹²⁵ IDB president Enrique Iglesias happily commented that the entire process had been an "educational experience [. . .] imperfect, of course, but a first step regardless." Little did he know just how blunt and environmental political tool the loan guarantees were or, how keen the domestic political forces were to foil the effort.

President Sarney went on several months later to tell the United Nations General Assembly that the industrialized countries bear the greatest responsibility for pollution of the environment and, that "Brazil is doing its part."¹²⁶ He also pointed out that developing countries, especially Brazil, insist

¹²³ RB-88-10, p.4.

¹²⁴ RB-89-07, p.10.

¹²⁵ RB-89-07, p.10.

¹²⁶ RB-89-09, p.3.

that the environment should not become another source of "conditionality" for access to development assistance. But, "the issue was not a major point of disagreement, with both the developing and industrial countries acknowledging the need for environmentally sustainable projects."¹²⁷ The thread of consensus, nationalistic rhetoric, international pressure and then the sidestepping of policy are all classic environmental political elements combined in Amazonian policy. Traditional political maneuvering succeeded fully; Sarney had done what he needed to do to secure the needed loans. Environmental politics succeeded too, but only partially, finally gaining a political dimension but, in reality, achieving little where it mattered in the forests.

The political debate in the Amazonian forest was also particularly savage regarding the building of roads into the region. As a tool to speed up the development of Amazonia, many massive road building projects were planned and begun in the 70's and early 80's. The most impressive of these, and most controversial, was the 1,450 km, BR-364 project connecting the capitals of Rondônia and Mato Grosso.¹²⁸ Since the paving of the segment of BR-364 that links Cuiabá with Porto Velho was concluded, Northwest Brazil was embroiled in heated local, national and international dispute.¹²⁹ The origin of the conflict was the ambitious development project to open the unexplored Amazon rain forest in the state of Rondônia to agricultural colonization. While promoting a large resettlement program, it was designed to populate the sparsely inhabited frontier through distribution of land parcels of 100 hectares to poor landless families and to relieve the increasing pressure for land reform.¹³⁰ The paving of BR-364

¹²⁷ RB-89-09, p.3.

¹²⁸ RB-84-09, p.3.

¹²⁹ "Brazil at Center of Controversy Over Rapid Amazon Development," *Info Brazil*, January 1989, 5.

¹³⁰ Ibid.

concluded in 1984 with a \$432-million loan from the World Bank and immediately resulted in an unexpected and unceasing rush of desperate land-starved peasants to the region as well as many squatters and companies seeking to take advantage of tax breaks and attractive loans made available.¹³¹ 1989 data indicated that, since the opening up of the region, 20% of Rondônia, an area the size of Denmark, had been deforested and was responsible for no less than 5 percent of all the carbon dioxide released into the earth's atmosphere in 1988.¹³²

Environmental groups and scholars in the United States and Europe were fast to condemn the road building and resettlement programs, pointing out that the resulting deforestation for cultivation was not economically sustainable in the soil and climactic conditions of the rain forest. Furthermore, it leads to "greater deforestation as more land is cleared to compensate for the decimation of the soil's nutrient base."¹³³ Faced with tremendous pressure from international environmental groups, the multilateral development banks finally used this massive destruction as evidence to review their development aid policies. This episode, however, revealed perhaps the most alarming deficiency of environmental politics. Time is the factor that most often conspires to undermine and frustrate environmental protective practices. In the previous case, the extent and speed of the deforestation accompanying the road building was not foreseen by the Brazilian government. Once realized, however, the environmental political mechanism necessary to stop the destruction was not powerful enough to work quickly to halt widespread deforestation.

The damming of Brazilian rivers is another major area of contention between the pro-development and conservation forces. For example, the Tucuruí project, in the state of Pará, was long presented by the Brazilian government as

¹³¹ Ibid.

¹³² Ibid.

¹³³ INFOBRAZIL/ JANUARY 1989

"the springboard for the industrialization of the whole Amazon region."¹³⁴

Hydropower, though, is a complex environmental issue since it is a sustainable source of wealth created in a relatively efficient way. Using the environmentalists own words, like "sustainable", the pro-development advocates were able to push hydropower to the extreme. Because of this, despite the possible environmental consequences later cited, "it is unlikely that international indignation will be enough to persuade Brazilian engineers to abandon their plans," for other hydroelectric projects.¹³⁵ The government was quick to point out that the project would help development by providing power to big industrial companies which had avoided the region because of the lack of electric energy. It was, however, very slow to assess its likely effects on the environment, though it was clear from the beginning that a 7-km dam, together with the 216,000 ha reservoir, would undoubtedly alter life in the region.¹³⁶ Strong currents, created as erosion of upstream river banks increases, the very real possibility of dam breaks, and the penetration of sea water into the river with the reduced outflow were later revealed as foreseeable environmental costs. These would certainly upset the whole ecology of the region and, as a result, fishing, farming, and the general life of the local inhabitants would all suffer.¹³⁷

b. Other Environmental Issues

Although deforestation, road building and damming of rivers represent a few of the larger environmental issues facing Brazil, there are countless others in which environmental politics are at work but to a lesser or more regional degree and, to varying degrees of success. For example, Brazil introduced its positive first phase of air pollution controls (caused by cars) only as

¹³⁴ RB-82-03, p.5.

¹³⁵ INFOBRAZIL/ MAY 1989, p. 3.

¹³⁶ RB-82-03, p.5.

¹³⁷ RB-82-03, p.6.

late as 1988.¹³⁸ While, on a more negative note, the uncontrolled poaching of protected animals (especially crocodile and alligator for hides) continues, threatening the extinction of crocodiles in the Amazon and endangering other species as well.¹³⁹ Environmental pressure on mining, however, sometimes mitigates widespread environmental destruction and environmental politics even resulted in a ban on the hunting of Minke whales in Brazil for the first time in thirty years. Though some less dramatic than others, these concerns all contribute to the huge score of environmental issues that successive Brazilian governments have had to deal with over the years. Though forced to some degree or another to acquiesce, there has been a limit to which pride and issues of national sovereignty prevent further environmental action.

For example, in August 1988, the Brazilian Federal Police filed charges of "violating a law that forbids foreigners from interfering in Brazilian domestic affairs," against Dr. Darrel Posey, an American ethnobotanist who had accompanied and served as interpreter for two Kaiapó Indians on a trip to Washington.¹⁴⁰ Although the charges reflected some government official's fears that a proposed World Bank loan might be withheld because of Indian complaints made during the visit to Washington, this action also hints at the limits of official tolerance the Brazilian government was willing to put up with. Also, Posey's case illustrates how sensitive Brazilians are to foreign criticism of their Amazon policies.¹⁴¹ The Nossa Natureza program is another case in point. Ariosto da Riva, the head of Indeco S.A. (Integration, Development and Colonization, Inc.), the largest private colonization concern in the country, denounced the plan as a sell out to "internationalists" who want to turn over the development of the

¹³⁸ RB-85-09, p.3.

¹³⁹ RB-86-10, p. 5.

¹⁴⁰ INFOBRAZIL/ JANUARY 1989, p.6.

¹⁴¹ INFOBRAZIL/JANUARY 1989, p. 6.

Amazon's potentially immense resources to international organizations. Riva and others contended that the "ecological package" put forward by President Sarney, "actually constitute a boycott of Brazilian development strategies, which although conscious of the inevitable environmental costs involved in the process of occupying the Amazon have correctly addressed the necessity of developing the region."¹⁴²

Brazilian officials are adamant that they not only recognize and understand the international concern over the Amazon but that they also know what is best for Brazil's future. For example, a 1989 *New York Times* editorial, calling for debt-for-nature swaps, was met with these blunt words: "Brazil will not become the ecological reserve of the rest of humanity . . . our greatest commitment is to economic development."¹⁴³ Marcelo Marques Moreira, the Brazilian Ambassador to the U.S. at that time, also echoed these words adding that the final responsibility for the conservation of the Brazilian Amazon lies with Brazil alone: "If there is an Amazon to conserve, it is because Brazil was able to conserve the largest tropical rain forest in the world. We do want advice and genuine cooperation from the international community, but it is Brazil which has the responsibility to conserve the Amazon."¹⁴⁴ Ambassador Moreira also emphasized that Brazil has undergone massive changes in the last 40 years, including great population growth, transformation from an agricultural to an industrial economy, and a major demographic shift from the countryside to the cities, making some type of Amazon development imperative for Brazil. "We are not going to destroy the Amazon. We are going to conserve it, but not in an immobile way. We will conserve it by changing it in an orderly way."¹⁴⁵ What

¹⁴² INFOBRAZIL/JANUARY 1989, p. 6.

¹⁴³ INFOBRAZIL/MARCH 1989, p.1.

¹⁴⁴ Ibid.

¹⁴⁵ Ibid..

Ambassador Moreira and the other pro-development pundits all fail to realize though, is that underlying the Amazon's robust appearance is a generally poor soil. Nutrients are stored not in the topsoil, but in the trees themselves. When they are felled and burned, the nutrients are soon lost through leaching, leaving a barren landscape. To conserve it in another than "immobile way" therefore, is a contradiction in terms.

In promoting development many Brazilian authorities are either skeptical of the ecological realities or think that development is worth the sacrifice that the destruction represents. By making it appear as an "us versus them" issue, that is such an indelible part of the Brazilian political culture, they are able to lessen the environmental political pressure with their own equally persuasive techniques. This is repeated on a micro scale as Amazon settlers, many of which had not yet received title to their land, "knock down trees with tractors just to prove to the government that they own the land."¹⁴⁶ Another embodiment of this spirit is the notion that development of the Amazon region is as much a matter of national sovereignty as it is economic hope. There is widespread fear that "as long as the vast region lay largely empty and unexploited, foreign powers would intervene and occupy the region –Integrar para não entregar, (integrate Amazonia with the rest of Brazil to avoid its being taken over by foreign interests), became the battle cry."¹⁴⁷

When, as a major effort to save the Amazon, the Five-year Rain forest Project as commissioned by the G-7 at its 1990 meeting in Houston, it was seen as full of ulterior motives in Brazil where there was mounting resentment of international pressure.¹⁴⁸ Pro-development forces condemned the project as one more effort by outsiders to interfere in domestic affairs and dictate policies for the

¹⁴⁶ INFOBRAZIL/DECEMBER 1986, p.6.

¹⁴⁷ INFOBRAZIL/MAY 1989, p.3.

¹⁴⁸ RB-90-06, p.3.

country's rain forests. When presidents Mikhail Gorbachev and François Mitterrand publicly advanced the notion that Brazil should be recognized as having only "relative sovereignty" over Amazonia, it was not difficult to see that the Brazilian people seem justified in their fears.¹⁴⁹ Such a statement by powerful political leaders points out that ignorance on how to accomplish environmental goals through politics is not limited to environmental scientists or World Bank presidents.

c. The Military Connection

The idea that environmental protection is as much emotional as substantive issue also finds great support in Brazilian military aspirations and their own notions of national security. Especially following the military return to power succeeding the 1964 ouster of President Joao Goulart, vast development schemes were hatched by the military regime to turn Brazil into a first-class power. A flurry of hastily-designed road building and other schemes followed, including declaring Manaus a free port, subsidizing cattle raising, hydroelectric development and development of the largest iron ore deposits in the world.¹⁵⁰

Although the military hoped that economic development could be achieved via crash Amazonian development, especially late in the 70's with the "Brazilian Miracle" on the tips of many tongues, it was the military's long focus on the Amazon region, in its concerns for national security, that have had the most lasting environmental political impact. Since the environmental movement started in Brazil and, lasting to today, environmental protection of the Amazon region was used as a "rallying-point for military hardliners, who have claimed that, with an eye on the region, foreign governments are conspiring with local ecological groups to have it 'internationalized'."¹⁵¹ The military in Brazil has

¹⁴⁹ Ibid.

¹⁵⁰ INFOBRAZIL/MAY 1989, p.3.

¹⁵¹ RB-92-03, p.1.

continually rejected suggestions that any international bodies with supranational powers be allowed to dictate Brazilian developmental practices. Harping on evidence like the Gorbachev, Mitterrand "relative sovereignty" comments, they have been quite successful in gaining support against the envisaged "internationalization."

Additionally, the military has always been afraid that its mostly undefended borders in the Amazon were susceptible to many forms of intrusion by guerilla groups and drug smugglers. Development of the region was touted as a way for the military to establish footholds and maintain a clear presence there against the perceived threats to security. Highway BR-364, aptly named after Marshal Rondon, the military chief who "tamed" the Amazon by setting up the first telegraph lines and making the first contacts with the Indians, was a crucial program in that regard.¹⁵² Soon after its completion, the Air Force quickly inaugurated two air bases and the army set up more units and increased the status of the existing ones in the surrounding region.

More recently, the Brazilian military has joined with the government to reassert the state's presence in the area following the widely reported massacre of Yanomami Indians in August 1993. Besides conducting a survey of the Amazon, which will divide it into economic and ecological zones, the Brazilian military recently conducted the largest war games ever in the region replete with the transfer of several battalions from the South of the country to the Amazon.¹⁵³ Also, despite severe economic problems, the military has taken action on SIVAM, or the System for the Surveillance of the Amazon, a plan to install a massive network of radar, communication systems and data processing centers so that the military can monitor air traffic and collect data on illegal activities in Amazonia. One element underlying the military's new uneasiness is the question that Brazil's

¹⁵² RB-84-09, p.3.

¹⁵³ INFOBRAZIL/NOVEMBER 1993, p.8.

security is being challenged. This is especially acute in light of new U.S. military actions in Guyana. Though no one in Brazil actually envisions an American, invasion of the country, the encroachments on Brazilian sovereignty under the auspices of environmentalism or drug interdiction are seen as seriously threatening to the Brazilian military.¹⁵⁴

While the areas most in question by the military contains, at least on paper, vast stretches of national parks and ecological preserves, no adequate infrastructure currently exists or has been provided to make them a reality. Though the military presence could ostensibly provide that, "construction of infrastructure in the Amazon has also tended to pave the way for environmental degradation and for the sort of population clashes which led to the murder of the Yanomami."¹⁵⁵ Therefore, while the massacre has refocused national and international attention on the environmental problems in the region, the proposed solutions may indeed prove environmentally costly. This is another case where environmental politics lose when faced with traditional political ideals.

d. Lessons From Brazil

On December 22 (1989) the forest lost its most determined defender. Because of his firm fight against the eviction of rubber tappers from their land and the destruction of the Acre rain forest, Francisco Mendes Filho, the rubber-tapper leader who helped save at least 1.5 million hectares of forest from destruction, was shot and killed by an unidentified gunman on his back porch. Although under police protection at the time, Mendes is thought to have been assassinated under orders from a local cattle rancher. His death mirrored the increasing violence in the Amazon and sharply focused world attention on Brazil's development policies in the region.¹⁵⁶

There can be no question that environmental politics are full of the same sorts of risks and uncertainties that are inherent in the rest of the political arena. Environmental politics are unique because of their recent and breakneck entrance

¹⁵⁴ INFOBRAZIL/NOVEMBER 1993, p.8.

¹⁵⁵ INFOBRAZIL/NOVEMBER 1993, p.8.

¹⁵⁶ INFOBRAZIL/JANUARY 1989, p.5.

onto the political scene, their dependence on timely action and their emotional elements but, they are rapidly becoming a standard political issue with standard political problems requiring standard political tactics. Since its arrival on the scene, skepticism and doubt have continually questioned the validity of the environmentalist claims but environmental concern has not vanished nor will it. Environmental issues are here to stay and environmental politics must adapt to their new role as a resident political notion if they hope to increase their power.

The environmental political issues brought up here represent only a handful of a vast number of environmental concerns that have besieged Brazil in the last 25 years. They do, however, provide a glimpse into the scope and the importance of environmental issues in modern Brazil and reveal their political dimension. Many of these same issues to differing degrees can also be seen in other Latin American nations and many of the conclusions remain valid for other nations as well. What is important is what can be learned from this broad perspective that can assist and further the environmental effort or, help the environmental and pro-developmental forces to better work out a solution that appeals to both perspectives. Of course there will be winners and losers but, by studying the unique aspects of environmental politics, its emotional as well as scientific nature and its dependence on timely action, both the environmentalist and the development advocates can better navigate the issues to reap the greatest amount of benefit to the country in a long term perspective.

So, we must now turn our attention to what environmental political study yields in terms of practices and policy suggestions that make sense in a modern Latin America and in terms of what can be learned toward forwarding environmental security in the rest of the hemisphere. It is clear that if the mistakes of the past are not to be repeated, a modified approach to development is urgently needed. To begin with, to best serve the environmental as well as nationalistic and developmental necessities, a consensus must be forwarded based on the fundamental premise that environmental protection is economically sound. In Brazil's case, the region's greatest value to clearly lies within the untouched

Amazon forest itself. The Amazon "contains ten percent or more of the world's plant and animal species, many not yet studied for their potential utility to human health, nutrition, and well being," which has far greater significance and potential wealth than a few head of cattle or a cut of lumber.¹⁵⁷ In order to preserve the forest as well as utilize it, a developmental necessity that the environmentalists must acknowledge, a policy framework that is sustainable and balances the stress caused by some current activities with steps to ease the pressure on the basin for the longer term must be adopted. The example of Chico Mendes and the rubber tappers of Acre must be expanded to fish, Brazil nuts and other resources on a wide scale. Other widely held environmental initiatives suggest that development, such as uncontrolled gold mining and industrial plants that rely heavily on wood supplies from the forest put undue stress on the ecosystem and must be abandoned. Other projects, however, such as mining operations, are more justified since they are mainly confined to small contained areas. With proper environmental-control laws and their rigorous enforcement, some mining activities can bring Brazil and other latin nations badly-needed foreign exchange while causing relatively little harm. If tradeoffs are required, many can be found in this sector.

In addition, land reform measures are needed to make it possible for more Brazilians to stay home rather than seek out a living in the Amazon. An emphasis on scientific research, to discover and analyze the biological riches that remain hidden within the forest, "might in the long run be the best way to move toward ecologically-sensitive utilization of the region and help realize the nation's longstanding Amazonian dream."¹⁵⁸ Of course, none of these suggestions are new and reflect but a few of the many long term, environmentally sound proposals that have been touted for years. Where more emphasis needs to be placed, however, is

¹⁵⁷ INFOBRAZIL/MAY 1989, p.3.

¹⁵⁸ INFOBRAZIL/MAY 1989, p.3.

in the political mechanisms with which to implement them. To do this, environmental demagoguery must be abandoned for a more enlightened approach. The World Bank, as well as all the other institutions that are pushing for environmental reform, must treat Brazil more as a partner in these efforts rather than an adversary. By encouraging partnerships with Brazilian institutions the collaboration will help to educate the indigenous peoples from within, a crucial aspect of the learning process. Recognizing Brazil's singular sovereignty over the Amazon basin is another natural first step, followed by offers of help rather than demands for action. Demands have shown themselves to be counterproductive, contributing to the adversarial and skeptical attitudes displayed by so many of the Brazilian powerful. Brazilians can be shown that the environment left untouched is more productive than one cut down. However, Brazilians can't be brow beaten into believing it. Brazilian Hispanic political culture is one that defies authority and, as we have seen, to prove a point the Brazilians can defy common sense. Additionally, the international community must set and maintain high environmental quality standards themselves: a good example is much more persuasive to Brazil than the bullying that has predominated. The industrialized nations do not necessarily have to "have their house in order" to request that Brazil follow strict environmental standards, but, they must at least be as willing to adopt and follow the same rules in their own countries that they wish Brazil to follow. This includes positively addressing the Brazilian government's view that, "as the biggest oil consumers and the principal polluters, the industrialized nations should make the largest contributions to the proposed fund, which would benefit poorer countries that do not have the means and access to state-of-the-art technologies to protect the environment."¹⁵⁹ Though to what extent "state-of-the-art" equipment is needed, and how the industrialized nations will pay needs some interpretation, the crux of the issue is valid and needs to be addressed. The much touted "debt for nature" swaps and other debt relief mechanisms are another area

¹⁵⁹ RB-92-04, p.4.

where environmental political pressure needs to focus since they have shown a positive means to both relieve Brazil's domestic financial strains as well as protect its most abused resource.

Finally, the new world order is one in which environmental issues will find themselves on center stage. It is also one in which bi-polar notions of security are rapidly expanding into mini spheres of influence and mini power struggles. Brazil, as the largest, most powerful nation in Latin America, will undoubtedly experience pressure to establish itself in this new order. Since nationalism, sovereignty and security issues have all shown that they can precipitate environmental destruction, care must be taken not to provoke Brazil into taking drastic steps to protect these sometimes vague and always controversial notions. In that light, since Brazil has just emerged from teetering on the perilous edge of a military takeover after its latest corruption scandal and continued hyper-inflation. The world, and especially the United States, must pledge support and assistance to keep Brazil economically sound, democratic and to prevent it from sliding back into a military regime. Though the recovering economy will probably prevent it, if the military were to assume control again, its development schemes and questionable SIVAM program might again breathe new, and environmentally destructive, life.

Although its size and Amazon make it unique, the lessons learned surrounding environmental politics in Brazil are valid throughout much of the Western Hemisphere and indeed in much of the developing world. Environmental politics are a critical element of environmental security and these lessons must be taken to heart.

B. ENVIRONMENTAL ECONOMICS

In the *Environmental Economic Revolution*, Michael Silverstein states, "For better or worse, attempts to grapple with man-made environmental upheavals spawned in this century will play an extraordinarily important role in shaping events during the next hundred years of human history."¹⁶⁰ In the field of economics, this greening effect is already noticeable as many of the world's leading economists are already actively addressing the economic/environmental interplay and achieving the environmental restructuring of economic institutions. In the US, environment linked factors are fundamentally altering the manner in which we value assets, the way products are made, the material that goes into their manufacture, the kinds of things people buy, and the way in which managers and planners function. This "greening" represents a set of changes so profound that some economist feel that they can "literally be said to constitute a second stage of the Industrial Revolution."¹⁶¹ This "second stage," however, is still largely a first world reality. Though beginning to be realized in parts of Latin America, environmentally unsound practices are still the rule.

Although the specific ways in which the US economy is being environmentally restructured involves a large variety of business sectors altering the manner in which goods are made, packaged and sold, this greening also extends to the way these goods are bought and sold to foreign countries. Since trade represents one of the crucial links to US economic revitalization and is the key to economic development in much of the developing world, the greening of trade is an important topic due to its potential for influencing environmental protection and the resultant consequences for environmental security.

This section is an examination of environmental economics and how politics

¹⁶⁰Michael Silverstein, *The Environmental Economic Revolution: How Business will Thrive and the Earth Survive in Years to Come*, (New York: St. Martin's Press, 1993), 1.

¹⁶¹*Ibid.*, 3.

and the use of trade can be used to both increase prosperity for Mexico and the US as well as forward environmental security aims. In this regard The North American Free Trade Agreement provides a ready-made case. Since so many instances of environmental degradation in this study underscored the economic components of environmental security, it is worthwhile to examine further the economic connection between environmental degradation and environmental security. Since the economic and environmental interactions are great between the US and Mexico and an unprecedented trade agreement has just been achieved, the Mexican case is especially appropriate.

1. Mexico and The North American Free Trade Agreement

On June 30, 1993 an American Federal judge ruled that, since negotiations have failed to address the treaty's effects on the environment, the North American Free Trade Agreement (NAFTA) violates the National Environmental Policy Act.¹⁶² Though unclear then just how important that ruling would be (it was subsequently overturned), it underscores the significance of U.S. environmental concerns in new legislation. This ruling is also a typical reaction to the present and future commitment in the United States to environmental protection and its responsiveness to environmental interest groups. Regarding NAFTA, this judgment occurred despite the fact that the environmental legislation in the agreement is unprecedented in any prior international treaty.¹⁶³ Indeed, environmental concerns were pushed into the spotlight as negotiations on NAFTA's supplementary agreements, which address other specific environmental aspects of NAFTA, stalled. The US, under extreme pressure from environmental interest groups, refused to modify its position that the agreement's environmental conditions must incorporate "the right to punish recidivists who violate their own

¹⁶² Mexico and NAFTA Report, "Problems with judges and side agreements," Latin American Regional Reports, 15 July 1993.

¹⁶³ Mexico and NAFTA Report, "The Environment," *Latin American Regional Reports*, 14 Jan 1993.

laws."¹⁶⁴ As a result, much of the pessimism regarding NAFTA's ratification hinged upon environmental issues. This sticking point, the environment, on a trade agreement that by most accounts ensures increased prosperity to all three major players, represents a recent but increasingly important facet of economics and politics today. It is a question especially important when looking at U.S. relations with Latin America.

This section investigates environmental economics in North America and the interplay between trade and environmental security. My evaluation follows the previous assumption that environmental security is primarily dependent upon economic realities so, accordingly, this section will primarily focus on the significant economic factors underlying environmental security. This section also underscores additional political links between trade and environmental security.

a. Sovereignty

On August 12, 1993 *The New York Times* published a curious statement by the Mexican Government regarding the U.S. demand for the right to sue for non-compliance with proposed environmental safeguards in the NAFTA treaty. The government concluded that the American position "attacks the concept of sovereignty and is, as such, inadmissible." This stance, on a side agreement that Mexico knew was a crucial one for American interests, is puzzling. Why was Mexico unwilling to concede further on environmental issues when they were willing to acquiesce to nearly all the other prior stipulations; including many regarding the environment? Did they really see it as an issue of national sovereignty? To explain this puzzle we first need to understand what drives the Mexican economic and political perspective since NAFTA and its questions on the environment stem fundamentally from this.

Besides the obvious and profound effects of the vast differences in personal wealth and standard of living between the US and Mexico, which

¹⁶⁴Mexico and NAFTA Report, "The negotiating pace quickens but major setback," *Latin American Regional Reports*, 10 June 1993.

certainly play an important role, two less obvious implications are also important. First, Mexico's boom and bust economy, 20th century revolution, and subsequent late start in developing have left the Mexican people two or three generations behind the U.S. in terms of the social and philosophical internalization associated with a modern industrialized nation. In other words, as an industrialized nation Mexico is in a very young stage compared to the United States. Though obvious, relevance here lies in the fact that the United States has lived through a century and a half of heavy industrial development. This coupled with a high standard of living has resulted in the formation, in the current generation, of a less industrialized economy and adoption of what is sometimes referred to as "post industrial values." Emphasizing quality of life and education over material wealth, postmaterial Americans are concerned with their environment. The manifestations of this concern can be seen everywhere from the recycling bins in virtually every community to the strength and influence environmental interest groups exert in congress. This movement transcends mere preaching about the environment and is a developmental understanding in a vast portion of the U.S. population. The shared understanding includes a vague but important notion that environmentally sound economic policy is just the right thing to do. This philosophy is assisted, but not driven, by the long term economic advantage created by putting the environment at the forefront of economic planning; an idea, though not discussed here, that is gaining momentum.

It follows that a large portion of Mexican society, lacking not only money but also this mindset, is unable to fully understand or comprehend the U.S. position on the environment. Mexicans still see growth first with perhaps environmental concerns coming later — when they can afford the luxury of thinking about them. For example, it is difficult to explain to a Mexican how the loss of nearly all U.S. old growth forest is a national tragedy when logging helped the U.S. to grow into the economic powerhouse of the world. If mainstream Mexico had a developmental philosophy — indeed many Mexicans are not aware of such a thing— they would view the loss of their biodiversity and pollution as an

unfortunate but inevitable result of development. If it will increase their standard of living and if it happened in the developed world then a deterministic outlook says that it will happen to them. It is acceptable if it will achieve the same results that were seen in the U.S.

Simply, the majority of Mexican people are not environmentally educated or infused with ecological values sufficiently for them to be deeply committed on a widespread basis to environmental preservation. They are too concerned with getting by and getting ahead to be worried about it on a large scale. Postmaterial Americans don't feel this way. Not having lived through the Mexican economic roller-coaster, manifest poverty, and never realized prosperity, North Americans see the environment through well-intentioned but, in latin respects, unrealistic eyes. Furthermore, postmaterial Americans feel it their obligation and responsibility to educate the world, pointing out that environmental destruction is not an acceptable result of a higher standard of living. They feel compelled in some way to stop other countries from making the same mistakes the U.S. made.

This fundamental misunderstanding which exists between the United States and Mexico is rooted deeply in a psychology wrought by their respective histories. It was inevitable within this context, that a trade agreement that contained vague environmental verbiage would be both too soft for U.S. sensibilities and too hard for the Mexicans to abide. The stricter side agreements, which went far in satisfying U.S. environmental interest groups were, not surprisingly, virtually unacceptable to even highly determined Mexican officials.

A second problem related to Mexican economic history, that also bodes poorly for the environmental aspects of NAFTA, ties in with the earlier mentioned, and seemingly puzzling, statement by the Mexican government regarding their sovereignty. Americans, in general, have a vague notion of what national sovereignty really means. In the U.S., the term is hidden by the fact that through the last century, and especially since the second world war, they have had

the luxury of being the world's pre-eminent power. Possessing a Calvinist sense of moral right, the United States has forced many nations to define their sovereignty while they themselves have seldom had it questioned. Mexico's notion of sovereignty, on the other hand, is very strong. Challenged in the past by British economic domination, French invasion, and most recently, United States economic influence and now environmental demands, Mexico survived it all and grew impressively for quite awhile in spite of what they saw as continuing foreign manipulation.

Indeed, Latin America in general, and Mexico in particular, is painfully aware of the issue of sovereignty. The term itself is used so frequently in Latin American press that it tends to lose some of its journalistic impact. It is, however, a living, breathing reality in Mexico. Domination by foreign interests has hindered, in their view, the ability of Mexico to handle its own affairs from early times until recently. As with land reform that sparked development, The Mexican Revolution is especially significant because it partially removed, at least in the mindset of the populous, much of that heavy cloak of domination. Impressively, Mexico emerged from that devastating war surging forward on an economic wave pushed by strengthening national sovereignty. Nationalization of the oil industry by President Cardenas in 1938 was a particularly important event. Again, a natural by-product of this wave was overt resentment toward foreign intervention and growing xenophobia. Though history shows that foreign investment never really departed Mexico, in the minds of the people, the economic "miracle" and industrialization seen in the decades following the Revolution were Mexico's alone (indeed, mostly they were).

Since success and national sovereignty worked hand in hand with 20th century Mexican development, they have no reason to give it up today. The debt crisis of 1982 was just another painful reminder of how foreign influence can arrest success and infringe on their sovereignty. It is easy to forget that industrialization was largely underwritten by foreign capital. Mexicans are eager to continue the successes of the past. Mexican sovereignty which was a key player

in that success will not be forgotten as well as the foreign influences that gave birth to the debt crisis. As a result, foreign powers, especially the United States, are not welcome to tell Mexico how they can or cannot handle their own affairs.

In varying degrees, Mexico's lower standard of living, lack of post-material values and strong national sovereignty are all obstacles in the path of the NAFTA's environmental considerations. However, because of the NAFTA's importance to Mexican economic re-emergence, the Mexican Government has, for the most part, subdued them and made great strides in their environmental program; such is the magnitude of the treaty. Indeed, the extent to which they have gone is fairly remarkable with respect to environmental controls present prior to the agreement and gives great hope for the potential of trade as a tool for establishing US environmental security in Mexico as well as other parts of Latin America. Impressive as they may be to a casual observer, however, it is in implementation of the environmental controls where the obstacles begin to show themselves.

b. Mexico's Environmental Response to NAFTA

Unfortunately, Mexico's impressive environmental awakening are revealed as mostly window dressing. Mexico's commitment to the environment is mainly concerned with how that commitment, or perceived commitment, will help pacify the United States in the hope of expanding trade. Greatly strengthened environmental legislation was viewed early on as needed to assist NAFTA's ratification in North America and result in the boost they envisioned in their own economy. Consequently, the environment has been at the fore of Mexican policy and great strides have been made. When continuing environmental issues proposed by the U.S. approach questions of national sovereignty, however, the whole issue can at times be too much for even motivated Mexican officials to deal with. While they withdraw to evaluate, sovereignty becomes a white towel thrown in the ring.

To Mexico's credit, they realize that gross environmental conditions do exist in their country and that action needed to be taken. They are not blind to

the horrendous pollution in their cities or the destruction of their forests. They are, in fact, sympathetic to the environmentalist cause thus providing a familiar consensus opinion regarding the environment despite the afore-mentioned predisposition to address environmental issues only after development goals have been reached. Resolving this issue becomes clear when we look at the problem in terms of degree.

To be aware is one thing, however, to be motivated enough to act decisively takes commitment and sacrifice. Mexicans can understand the problems, talk to negotiate and even agree with the environmental platform but widespread impact will not be realized soon. Mere understanding, sympathy and a token effort will not overshadow the fact that no widespread motivation or conviction is rooted in the populous. That lack of conviction combined with a shortage of funds necessary to do the job correctly to enforce their own progressive laws leaves their environmental program impotent. This, coupled with increasingly stringent side agreements, which bring questions of national sovereignty into the equation, and the impasse becomes clear. The dilemma is exemplified when we examine current Mexican environmental legislation.

Regarding the environment, the Mexican Government has, not surprisingly, two sides. The efficient side, as evidenced by their skillful maneuvering with the U.S. government on the NAFTA issue, is noteworthy. So too, is the impressive way in which efficient environmental legislation has emerged from the Mexican Government when a clear demand for it arose. Mexico's General Ecology Law, effective in 1988, is one such case. Designed to further environmental protection and natural resource conservation, the environmental protection provisions address air, water, hazardous waste pollution, pesticides and toxic substances as well as establish a framework for making appraisals of environmental impact.¹⁶⁵ The General Ecology Law is, in my

¹⁶⁵Report to the Chairman, Committee on Commerce, Science and Transportation, U.S. Senate "U.S. Mexico Trade, assessment of Mexico's

opinion, an efficient and progressive law especially coming from a developing nation. Impressive yes, it also contains loopholes and other provisions that allow the law to fall prey to the "dark side" of Mexican politics: namely corruption, elitism and the historical and revolutionary legacies of paternalism and legalism. Lofty goals that intended to allow only ecologically sound activities to pass, while not accepting investments that are harmful to the environment, get mired down in practice. An August, 1992 report to the U.S. Senate intended to "identify Mexico's efforts to strengthen its environmental protection program" unwittingly uncovered some of these realities.

First, of the six new maquiladora plants investigated by the committee that were established in Mexico between May 1990 and June 1991, none had prepared environmental impact assessments (EIA's) or had obtained letters stating that an EIA was not required.¹⁶⁶ Certainly a powerful tool if used correctly, EIA's non-enforcement provides a glimpse into the weakness of the Mexican environmental protection plan. Though six maquiladoras are not significant, the statement in the report that non-compliance with EIA requirements is widespread, and not confined solely to new U.S. majority-owned maquiladoras, is significant. In addition, though the budget and staffing for the new Secretariat of Social Development (SEDESOL), which includes all environmental functions, has increased significantly since 1989, its net effectiveness, outside of being a powerful legitimizing tool, remains in doubt. The fact that all levels of government from federal to local have delineated responsibility for evaluating EIA's and, that in practice, few do any evaluating, is telling about the de-centralized nature of the program. A lengthy paper trail beginning with a "Informe Preventivo" (a standard form filled out by the company itself to access its own assessment of environmental impact) to the "Dictamen de

Environmental Controls for New Companies", August 1992.

¹⁶⁶EIA's are the cornerstone of Mexico's new environmental protection strategy

viabilidad" (which must be filled out if the company feels it will, in fact, have a significant environmental impact), to final evaluation and risk study leaves open a great possibility for slow movement, payoffs and simple non-compliance.

The Senate committee sighted specific guidance "to the companies themselves" in preparing the EIA's as a way to improve the system, along with an undefined need to improve enforcement. No mention at all occurs about the Mexican system's predisposition to be weak on enforcement, given the general lack of commitment to the environment, or its propensity for corruption. Furthermore, no clear autonomous disconnection between SEDESOL and other elements of the government is ever made clear; an absolutely essential element to a non-biased organization.

Following up on the 1992 Senate committee results, as late as 16 August 1993, little has changed. On that date, *The New York Times* published the second of two articles chronicalling the sorry state of Mexico's huge environmental problem. Sighting a complete lack of equipment for any testing and, an unexplained stoppage of pay in the last five months for the environmental enforcers, the articles echoed the Senate committee suggestions for more rigorous inspection. Concluding a lengthy discussion of the staggering proportions of Mexico's environmental problems, the last article finishes by mentioning a hopeful 1991 study by two Princeton University economists. That study concluded that "economic growth tends to alleviate pollution problems once a country's per capita income reaches about \$4,000 to \$5,000"—Mexico's level now. Said to often be quoted by Mexican officials, the study is sighted to prove the environmental benefits to be gained from NAFTA. Though, "smacking of wishful thinking," it is correct in pointing out that environmental protection is most directly assisted by money in the pockets of the people. That NAFTA can provide the needed resources to truly begin environmental protection provides the first, and in my opinion only, real hope that Mexico's environmental problems can be solved. And, consequently, America's environmental security goals forwarded. To think that the problems will go away by merely ratifying NAFTA is, however, shortsighted.

The fact that my assessment of the Mexican environmental program draws heavily upon historical values and political culture means that any changes must involve evolutionary as well as revolutionary techniques and results. For the sake of NAFTA, merely hiding the end results of their current environmental programs behind a plethora of statistics chronicling the Salinas Government's battle for the environment won't make the problems go away. Despite my contention that the NAFTA provides hope for Mexico's environmental future in the long run, I criticize those that feel that Mexico's current environmental program is sufficient to make quick strides or, that prosperity under NAFTA will make it so. A reversal of Mexico's environmental woes will, indeed, start with increased prosperity but, continuation will require a national commitment borne of steady, controlled economic growth leading to long-lasting prosperity: the kind of prosperity that leads to post-industrial values and adoption of quality of life goals. These values are self learned and internalized, they are not absorbed by "punishing recidivists who violate their own laws," nor can they be pushed down the throats of the Mexican people by well-intentioned U.S. environmental interest groups. As well, it must be understood that should economic history repeat itself, that is continue on a boom to bust pattern in Mexico, then the environmental commitment will be among the first casualties.

Environmental protection, in that sense, is indeed a product of those that can afford it. So, the obvious question remains, will NAFTA be the vehicle by which Mexico can embark on a sustained path of prosperity? That question, truly the most important one with regards to the Mexican environment, is generally beyond the scope of this assessment and lives in the theoretical world for the time being. I can only make some generalizations about the document itself and its prospects.

Though tempting, it is too simple to relegate NAFTA and environmental politics to the simple question of prosperity equals success or vice versa. Economic programs seldom result in black and white outcomes but, rather, something in between. In this sense, NAFTA has another important role

by mitigating environmental impacts in economic down periods or following prosperous periods with more rigorous environmental protection. To evaluate this element of NAFTA we must now turn to the document itself.

There is little doubt that on 17 December 1992, when the United States, Canada and Mexico signed the North American Free Trade Agreement, they were signing the most comprehensive free trade pact ever negotiated between regional trading partners and the first between a developing country and industrialized nations. That aside, the environmental issue has stood out not only because it was among the initial critiques, but also, because of its tenacity to solve and novelty as a major trade issue.

Not only did the environmental issue plague President Bush in his dealings with the NAFTA, but it was also one of President Clinton's "five unilateral measures that the United States should enact in the context of NAFTA implementing legislation." In addition, an Environmental Protection Commission, headed by Vice President Gore, was put forward as one of three additional side agreements. Though President Salinas reacted positively to these proposals, the environmental issues were the last and most difficult to be resolved. This is extraordinary, again, as we are reminded by Clyde Hufbauer and Jefferey Schott in their definitive book *NAFTA: An Assessment*, that the NAFTA "stands as a landmark accord for handling environmental issues in a trade agreement." Environmental concerns, it seems, are growing at a rate that even progressive legislation has trouble keeping abreast. If the Bush administration's solutions fell behind the rising curve of environmental concerns, necessitating the Clinton administration to take up the slack, then how does the North American Free Trade Agreement itself deal with the rising curve of environmental concerns?

Here I defer to Hufbauer and Schott's assessment of NAFTA because it provides the most complete picture. They point out that "NAFTA attempts to ensure that existing standards are maintained, but the NAFTA does not contain provisions to upgrade the enforcement of existing standards or to adopt enhanced standards." Though they also go on to chronicle the number of environmental

inspectors added in recent years and the sevenfold increase in the country's environmental budget, they also point out that, "after years of neglect, Mexico's environmental problems are deep rooted and will require sustained long-term attention." Given my assessment earlier that, although strong and progressive, Mexican environmental laws as they stand will not do much for the environment, and that new provisions to upgrade enforcement of existing standards do not exist in the NAFTA, I am critical of the Legislation as it stands.

Hufbauer and Schott spend much effort listing what "should" be done to ensure that progressive environmental standards that will do some good in the long run are met. Through new enforcement, joint design of environmental product and process standards and implementation of the "polluter pays" principle, they go far in describing what NAFTA could do to remain a "landmark" treaty. Consequently, I feel that although NAFTA could be very useful in enabling Mexico to begin alleviating its environmental problems, as it stands, it is weak. However, even if the problems in the verbiage of the treaty are worked out, the obstacles and environmental predisposition that I laid out earlier will still loom large.

Despite these problems, what the trade agreement did accomplish and can accomplish in the future are encouraging signs for the power of trade agreements in achieving environmental security. Even though the NAFTA as it currently stands may do little to clean up the Mexican environment in the short term, and thus does little to address the quality of life issues on the US/Mexican border, the larger notion of economic revitalization for Mexico and its eventual positive environmental consequences may be helped. In the process, the security impact on environmental refugees and regional stability may be greatly bolstered.

c. Mexico's Environmental Future

Clearly, Mexico's economy and its environment are inextricably linked. Unfortunately, though the course of economic growth will determine Mexico's environmental future, few of those in a position to make policy are discussing the impact North American Free Trade will have on the Mexico's

environment. "The architects of Mexico's impending wholesale integration into the world economy rarely speak out about environmental protection."¹⁶⁷ Present realities and an ideology linked to the future has led free traders and fiscal reformers to ignore the environmental question and treat it as a non-issue, despite the apparent importance the Salinas government has attributed to the environmental agreements. The question remains, what does the environmental future of Mexico look like, does the NAFTA make a difference in the long run?

As I have previously stated, Mexicans are aware and perceptive to the environmental problem in their country but, lack a resident commitment or political mechanism to act on that understanding. That money, over time, will develop a devotion to the environment that will alter the country's sorry record of past abuse is yet to be demonstrated. I feel, however, confident that this formula is sound and indeed, Mexico's only hope. Unfortunately, time may prove itself a destructive conspirator to the ecological preservation of Mexico.

Though the environmental and economic reforms the Mexican government have undertaken are welcome and needed to eliminate distortions that allowed and even encouraged past environmental abuses, Mexico still faces an enormous environmental challenge in the future. Putting the economy and the environment into perspective with one another is often not as simple as it may seem. If, for instance, the new economic strategy displaces poor farmers from their lands, it must ensure that their alternatives will not translate into greater environmental hazards in the future. If they are making room for more intensive "modern" agriculture then the impact of chemical fertilizers and pesticides must also enter the equation. If poor farmers are displaced to hillsides, that are doubly susceptible to erosion, while at the same time chemicals from the modern agriculture de-oxygenate local lakes, then the marginal net economic gains become

¹⁶⁷Steven E. Sanderson, "Mexico's Environmental Future," *Current History*, February 1993, 73.

worthless.¹⁶⁸ Industrial development holds the same problems. If Mexico grows further industrially, it must think of the environmental costs or risks "becoming part of a Dickensian landscape of factories serving consumers in cleaner environments elsewhere."¹⁶⁹

The point is, Mexican economic reforms can lead to increasing environmental destruction which will completely undermine the lofty environmental concerns the economic reforms hoped to solve. With the environmental clock ticking, the idea that Mexico could end up looking like an industrialized Haiti is not beyond the realm of comprehension.

As we have seen in the United States, the environment is very expensive to clean up and, biodiversity lost is forever. The dilemma facing the NAFTA about the environment remains; will the economic growth hoped for create additional costly, and often unforeseen, ecological damage or, will it provide the needed resources to back up and enforce the environmental laws already in place? Will a better standard of living instill an environmental commitment in the populous and remove the peasants from the hillsides or, will the lopsided division of wealth remain, keeping the peasants where they are but adding more hydrocarbon emissions to the atmosphere as the new wealth is translated into new cars? Will the NAFTA accelerate environmental destruction towards an unescapable spiral to complete destruction of the environment or will wealth provide a foundation from which to climb out? History and common sense dictate that Mexico will take a long time to internalize a commitment to the environment. Is the environmental destruction continuing at such a pace that total destruction will coincide with the development of that commitment?

These questions are so important that we can be both encouraged by the fact that they are finally being brought up in agreements such as the NAFTA

¹⁶⁸This is, of course, ascribing a cost to the environmental degradation— a process only recently beginning to occur.

¹⁶⁹Sanderson, "Mexico's Environmental Future," 77.

and, at the same time, there is the disheartening fact that many American politicians and Mexican officials have downplayed their significance. It is true that the environment has tremendous powers to heal itself but, because the environment is so woven together with subtle interdependencies, unintended damage can occur from unlikely sources. Thus, protection and preservation defies even "unprecedented" solutions like the NAFTA unless they are also progressive and flexible. Unfortunately, politics by definition, Mexican history and questions of sovereignty have all conspired to limit the progressiveness of the environmental legislation in the NAFTA. Is the environment better off with an agreement that finally brings many of the important questions to light or, is its ineffectualness then even more destructive following economic progress?

We should feel confident that the answer is not beyond the ability of rational people to solve. The NAFTA is a positive step because it brings environmental issues to the fore but, by issuing vague and ineffectual legislation regarding the environment, it risks doing more harm than good. In that sense, the agreement needs to be evolutionary as well as revolutionary to break down destructive trends before they accelerate under economic progress and population increases. The NAFTA must never be put on a shelf and admired as an accomplishment but, rather, needs to be an ongoing project evolving with every unforeseen repercussion. The NAFTA, in my opinion, represents freedom, progress and the chance for very different cultures to learn from one another—things that should only be encouraged. That freedom and progress though, cannot be left unchecked or the environmental effects will multiply.

Is Mexico or other nations in Latin America capable of adopting a post-material mindset strong enough and in time to save their environment? I think the answer is yes but, not without help, realistic support, and understanding focused on their priorities as a society. This coupled with increased wealth in the developing world holds the answer to environmental security for America. Can trade issues like the NAFTA help provide these things? — Only time will tell but their importance as a potential tool in this regard are great and

should not be discounted despite its poor initial record.

V. CONCLUSION

Though the environmental bandwagon has grown tremendously in both power and scope in recent years, specific insight into how environmental degradation poses a viable US national security concern remains fragmentary and poorly focused. Starting with the oil embargo and oil price increases of 1973 — which were the first issues to change US perceptions of national security to include natural resource vulnerabilities— national security strategy has slowly been forced to accept resource and environmental realities. The growth and increasing power of environmental interest groups, as well as ecological disasters such as the oil spill at Prince William Sound and the Chernobyl nuclear plant accident, have helped galvanize world attention on environmental issues. They have added a greater sense of urgency and legitimacy to those voices who, since the late 70's and early 80's, have been calling for environmental issues to join in a broadening definition of what constitutes US national security.¹⁷⁰ Despite all this, skepticism and difficulty in identifying specific threats continue to combine to limit preventative action.

By stating in its first paragraph that "large scale environmental degradation. . . threatens to undermine political stability in many countries and regions," the July 1994 *National Security Strategy of Engagement of Enlargement* shows how deeply environmental concerns have finally penetrated thinking on new national security strategy.¹⁷¹ The appointment last year of the first Deputy Under Secretary of Defense for Environmental Security further underscores this point. And yet, although certain environmental catastrophes appear serious enough to jeopardize international stability and easily fit as national security

¹⁷⁰Holdren, *Environmental Dimensions of Security*, iii. Also, see Joseph J. Romm, *Defining National Security: The Nonmilitary Aspects*, 25-29. for an in-depth look at early published notification on environmental issues and regional stresses and conflicts.

¹⁷¹The White House, *A National Security Strategy of Engagement and Enlargement*.

concerns, it is the less spectacular, but even more widespread, ecosystem damage caused by deforestation, loss of biodiversity, ozone depletion, and climactic changes, for example, that still lack a clear understanding in terms of their national security implications. It is especially these unclear issues that fall prey to the skeptics. It is also these threats, the result of modernization, development, population growth, trade and a myriad unknown interactions, that simply defy classic definition as security risks under traditional perceptions of national security. Although there are encouraging signs that views about the environment are beginning to change, even among the most skeptical, governmental policy is also notoriously difficult to revise. By definition things move very slowly. This is especially true in the security arena.

This thesis attempted to reconcile environmental degradation as a national security concern by examining the complicated framework of environmental security, its controversial nature and difficulty being framed as national security concerns, and by showing how clear definitions and criteria can reveal national security priorities. Also, since environmental threats are fundamentally different from traditional military or ideological threats faced by the US, to effectively counter they require development of non-traditional thinking. In part, however, this demands that long-established security notions be either entirely set aside or fundamentally altered. This is particularly difficult to accomplish when remnants of traditional threats remain. Mere acceptance of the security ramifications of environmental degradation, in other words, cannot immediately be transferred into policy unless the previous security framework changes or broadens to accept nonmilitary, and hence, non-traditional threats.

Although I have stipulated that to some degree this process has begun in at least a conceptual way, it cannot be overstated that the US security posture, like a societies consciousness, "changes only gradually— usually with the change of generations."¹⁷² For this reason, despite the end of the cold war, it is likely that

¹⁷²Richard H. Ullman, "Redefining Security," 153.

for the foreseeable future American national security strategy will continue to be more willing to expend its limited resources on traditional military measures than to prevent or ameliorate the effects of environmental degradation.¹⁷³ In the meantime, however, the world's population continues to increase by nearly 90 million people annually and tropical forest cover the area of New York, Connecticut, Massachusetts, Vermont and New Hampshire combined is lost each year. The US security implications of these and many other environmental problems must be evaluated and plans to counter these threats made. But, according to some workable criteria and within a realistic framework that accepts the limited ability of current national security policy to adapt quickly. From this understanding, adequate plans to combat the degradation can be created and put into effect.

As the US formulates its security strategy, it is not only current issues but the potential threats posed by environmental thresholds being reached and unleashing tremendous security repercussions which simply cannot be ignored. Conceptually, at least, we are beginning to realize this. However, by citing the environmental problems without an adequate understanding of why they are threats in the first place hurts our ability to formulate a strategy to address them and does little to prepare the US to handle threats as they arise. Assessing the wide number of issues to a few that clearly fit under national security criteria, and which can be dealt with and learned from is, therefore, in order. Accordingly, concerns need to be limited to current threats that can be clearly defined and which fit current national priorities. It is my assessment that because of the lack of an adequate understanding of the parameters of environmental degradation and the lack of criteria far for specifically defining environmental security threats, then intimidation over the scope of the problem and skepticism remains a powerful and action-limiting factor. In this manner controversy continues to be powerful enough to counter or deflate the importance of much of the environmental security outcry. As long as a commitment and financially feasible

¹⁷³Ibid.

means to address the threats can be proven, environmental degradation addressed from a national security perspective provides the only real hope for timely action.

It was also revealed that if environmental issues fit security criteria then it is there that they must be placed and only there where they will receive the required resources to solve them— but only if the country gets serious. Environmental security must be seen as a permanent mission under national security strategy. We should remember that it took over four decades to win the cold war. It is therefore inconsistent to argue that environmental threats facing the US are not legitimate security threats merely because they are long-term dangers that require long-term tactics.¹⁷⁴ By specifically defining the individual, legitimate, and immediate threats within a clear and permanent national security strategy, an alarmist, quick-fix mentality can be avoided and a great deal of controversy quelled.

Armed with an understanding of the complexities of environmental degradation, basic definitions and national security criteria, chapter three broadly identified the transnational environmental security threats faced by the US. By narrowing the focus and immediacy of various issues it was revealed that quality of life for border regions of the US and the economic threats caused by environmental degradation in the developing world pose the greatest US environmental security threats. In order to combat these threats a wide variety of tools, some traditional some not, were deemed appropriate. To see results, however, the use of efficient environmental politics, trade and, in a few cases, the military are needed.

Implementation of environmental security is not an easy process. Dealing with developing nations; trying to influence them into actions which are neither widely understood nor accepted, brings up a score of difficult issues including national sovereignty, culture, and development philosophy. Though environmental politics and environmental economics are very new concepts, the case studies of

¹⁷⁴Ibid.

Brazil and Mexico along with the North American Free Trade Agreement highlighted some of these problems as well as showed some lessons for future negotiations and hope for future environmental progress. Though the road to environmental security is a tricky one, it is one that must be taken. By understanding and identifying the risks, addressing the criticism and realistically countering the threats it can be achieved.

SELECTED BIBLIOGRAPHY

- Bagley, Bruce M. & Sergio Aguayo Quezada. *Mexico: In Search of Security*. New Brunswick: Transaction Publishers, 1993.
- Barry, Tom, Harry Browne & Beth Sims. *The Great Divide: The Challenge of US-Mexico Relations in the 1990's*. New York: Grove Press, 1994.
- Broadus, James M. and Raphael V. Vartanov. "The Oceans and Environmental Security." *Oceanus*. Summer 1991, 14-19.
- Brown, Lester R., Christopher Flavin, Sandra Postel. *Saving the Planet: How to Shape an Environmentally Sustainable Global Economy*. New York: W.W. Norton & Company, 1991.
- Butler, Alison. "Environmental Protection and Free Trade: Are They Mutually Exclusive?." Federal Reserve Bank of ST. Louis. May/June 1992, 3-16.
- Butts, Kent H. "Environmental Security: A DOD Partnership for Peace." *Strategic Studies Institute Special Report*. Washington D.C.: U.S. Government Printing Office, 1994.
- Caldwell, Lynton K. *Between Two Worlds: Science, the Environmental Movement, and Policy Choice*. New York: Cambridge University Press, 1990.
- Cavanagh, John, John Gershman, Karen Baker and Gretchen Helmke. *Trading Freedom: How Free Trade Affects Our Lives, Work, and Environment*. Montpelier, Vermont: Capital City Press, 1992.
- Congressional Budget Office, *A Budgetary and Economic Analysis of the North American Free Trade Agreement*. Washington D.C.: U.S. Government Printing Office, 1993.
- Deudney, Daniel. "Environment and Security: Muddled Thinking." *The Bulletin of the Atomic Scientists*. April 1991.
- The Economist*. "A Problem as Big as a Planet." 5 November 1994, 83.
- _____. "Environmental Groups: As Green Turns to Brown." 5 March 1994, 27.
- Ehrlich, Paul R. and Edward O. Wilson. "Biodiversity Studies: Science and Policy." *Science*. 16 August 1991.

Ellsaesser, Hugh W. ed. *Global 2000 Revisited: Mankind's Impact on Spaceship Earth*. New York: Paragon House, 1987.

Field, Barry C. *Environmental Economics: An Introduction*. New York: McGraw-Hill, Inc., 1994.

French, Hilary F. *Costly Tradeoffs: Reconciling Trade and the Environment*. Washington D.C.: Worldwatch Institute, 1993.

Gaddis, John L. *Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy*. New York: Oxford University Press, 1982.

Gleick, Peter H. "Environment and Security: The Clear Connections." *Bulletin of the Atomic Scientists*, April 1991, 17.

_____. "The Effects of Future Climactic Changes on International Water Resources: The Colorado River, The United States, and Mexico." *Policy Sciences*. 21, 1988, 23-39.

Goodman, Sherri W. "Vision for Environmental Security." *Defense* 94. 3 (1994) : 25-39.

Grayson, George W. *The North American Free Trade Agreement*. Headline Series: Foreign Policy Association, 1993.

Helvarg, David. "The War on Greens: The Anti-Enviro Movement is Growing— And Getting Uglier." *The Nation*, 28 November 1994, 646-651.

Holdren, John, Thomas Homer-Dixon, Elizabeth Kirk, Ronnie Lipschutz and Thomas Naff. "Environmental Dimensions of Security." In *Proceedings from a AAAS Annual Meeting Symposium 9 February 1992*. Washington D.C.: American Association for the Advancement of Science, 1992.

Homer-Dixon, Thomas F. *Environmental Scarcity and Global Security*. New York: Foreign Policy Association, 1993.

_____. "On the Threshold: Environmental Changes as Causes of Acute Conflict." *International Security*. Fall 1991, 76-116.

INFOBRAZIL. "Brazil at Center of Controversy Over Rapid Amazon Development," January 1989, 5.

The Interparliamentary Conference on the Global Environment: Final Proceedings.
Washington D.C.: US Government Printing Office, 1990.

Johnston, Douglas M. "Vulnerable Coastal and Marine Areas: A Framework for the Planning of Environmental Security Zones in the Oceans." *Ocean Development and International Law*. 24. 1993, 63-79.

Kaplan, Robert. "The Coming Anarchy: A Preview of the Savagery, Tribalism and Warfare That Lie Ahead." *The Atlantic Monthly*. 273 n2, February 1994.

Lanier-Graham, Susan D. *The Ecology of War*. New York: Walker and Company, 1993.

Latin American Regional Reports: Brazil. "Satellite Stirs Up Amazon Dispute." RB-80-03, 3.

_____. "Rondonia Chooses Labor" RB-82-09, 4.

_____. "Alarm Over Amazon Deforestation: Study Suggests 'Minimal Areas of Conservation.'" RB-86-09, 5.

_____. "Safeguards Approved by the Assembly." RB-88-06, 3.

_____. "Sarney Acts on the Environment." RB-88-10, 12.

_____. "Loans Linked to Destruction of Rainforest." RB-89-07, 10.

_____. "Capitol Hill: Sarney Wants Shared Responsibility for the Environment." RB-89-09, 19.

_____. "Road to Amazon Ready at Last" RB-84-09, 3.

_____. "Tucuruí: the cost of development." RB-82-03, 5.

_____. "In Brief: Pollution." RB-85-09, 18.

_____. "Environment: Concern over marshland Alligators." RB-86-10, 5.

_____. "'Internationalisation' of Amazonia rallying-point for military hardliners." RB-92-03, 1.

_____. "Defender of Amazon rainforest fired." RB-92-04, 4.

Latin American Regional Reports: Mexico and NAFTA Report. "Problems with judges and side agreements." 15 July 1993.

_____. "The Environment." 14 January 1993.

_____. "The negotiating pace quickens but major setback." 10 June 1993.

Levin, Norman D. *Prisms & Policy: U.S. Security Strategy After the Cold War.* Santa Monica: RAND. 1994.

Maguire, Andrew and Janet Welsh Brown ed. *Bordering on Trouble: Resource & Politics in Latin America.* Bethesda: Adler & Adler, 1986.

Mathews, Jessica T. "Redefining Security." *Foreign Affairs.* Spring 1989, 162-177.

McLaren, P. "Navies & The Global Environment." *Navy International,* January/February 1993, 12.

Meadows, Donella H., Dennis L. Meadows, Jorgen Randers. *Beyond The Limits: Confronting Global Collapse, Envisioning a Sustainable Future.* Post Mills, Vermont: Chelsea Green Publishing, 1992.

Minott, Rodney K. "Environmental Degradation As A National Security Problem: Armed Forces." U.S. Naval Postgraduate School. Spring 1993.

Muñoz, Heraldo and Robin Rosenberg. *Difficult Liaison: Trade and the Environment in the Americas.* New Brunswick: Transaction Publishers, 1993.

Myers, Norman. "Environment and Security." *Foreign Policy.* Spring 1989, 23-41.

National Security Planning Associates, "The Environment & National Security: The U.S. Navy's Capabilities and Requirements." A Study Submitted to The Deputy Chief of Naval Operations (Logistics) and The Defense Nuclear Agency, September 1993.

Parfit, Michael. "Troubled Waters Run Deep." *National Geographic.* 184 n5A, 1993, 82.

Pontecorvo, Giulio ed. *The New Order of the Oceans.* New York: Columbia University Press, 1986.

Repetto, Robert ed. *Wasting Assets.* Washington D.C.: World Resources Institute. 1989.

Report to the Chairman, Committee on Commerce, Science and Transportation, U.S. Senate. "U.S. Mexico Trade: Assessment of Mexico's Environmental Controls for new Companies." August 1992.

Romm, Joseph J. *The Once and Future Superpower*. New York: William Morrow and Company. 1992.

_____. *Defining National Security: The Nonmilitary Aspects*. New York: Council on Foreign Relations Press, 1993.

Runge, C. Ford. *Freer Trade, Protected Environment: Balancing Trade Liberalization and Environmental Interests*. New York: Council on Foreign Relations Press, 1994.

Sanderson, Steven E. *The Politics of Trade in Latin American Development*. Stanford: Stanford University Press, 1992.

_____. "Mexico's Environmental Future." *Current History*. February 1993, 73.

Sarkesian, Sam C. *U.S. National Security: Policymakers, Processes, and Politics*. Boulder: Lynne Rienner Publishers, 1989.

Shrybman, Steven. "The Costs of Economic Integration." *World Policy Journal*. Winter 1991-92, 93-109.

Silverstein, Michael. *The Environmental Economic Revolution: How Business Will Thrive and the Earth Survive in Years to Come*. New York: St. Martin's Press, 1993.

Stokke, Olav S. *Western Environmental Interests in the Arctic*. Aberdeen Scotland: Centre for Defence Studies, 1992.

Susskind, Lawrence E. *Environmental Diplomacy: Negotiating More Effective Global Agreements*. New York: Oxford University Press, 1994.

Ullman, Richard H. "Redefining Security." *International Security*. 8 n1 Summer 1983, 129-153.

Wacker, Ronnie. "Earth Summit Wrap-Up." *Display*, Summer 1992, 58.

The White House. *A National Security Strategy of Engagement and Enlargement*. Washington D.C.: U.S. Government Printing Office, July 1994.

Wickham-Crowley, Timothy P. *Guerrillas & Revolution in Latin America: A Comprehensive Study of Insurgents and Regimes Since 1956*. Princeton: Princeton University Press, 1992.

Zaelke, Durwood, Paul Orbuch and Robert Housman. *Trade and the Environment: Law, Economics, and Policy*. Washington D.C.: Island Press, 1993.

INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center 2
 Cameron, Station
 Alexandria, Va 22304-6145

2. Library, Code 52 2
 Naval Postgraduate School
 Monterey, CA 93943-5101

3. Dr. Thomas C. Bruneau 1
 Chairman, National Security Affairs (NS/Bn)
 Naval Postgraduate School
 Monterey, CA 93943-5000

4. Dr. Rodney Kennedy-Minott. 1
 Dept. of National Security Affairs
 Naval Postgraduate School
 Monterey, CA 93943-5000

5. Dr. Robert E. Looney 1
 Dept. of National Security Affairs (NS/Lx)
 Naval Postgraduate School
 Monterey, CA 93943-5000

6. Sherri Wasserman-Goodman 1
 Deputy Under Secretary of Defense for Environmental Security
 Pentagon
 3400 Defense Pentagon
 Washington D.C. 20301-3400

7. Leon S. Fuerth 1
 National Security Advisor for the Vice President
 Old Executive Office Building, Rm. 294
 Corner of 17th St., NW & Pennsylvania Ave.
 N.W. Washington D.C. 20501

8. Danielle Pool 1
 Bureau of Intelligence & Research
 Main State Department Building
 2201 C. Street
 N.W. Washington D.C. 20520-6510

9. Lt. Scott C. Kraverath 2
1204 Scotch Pine
Edmond, Ok 73034